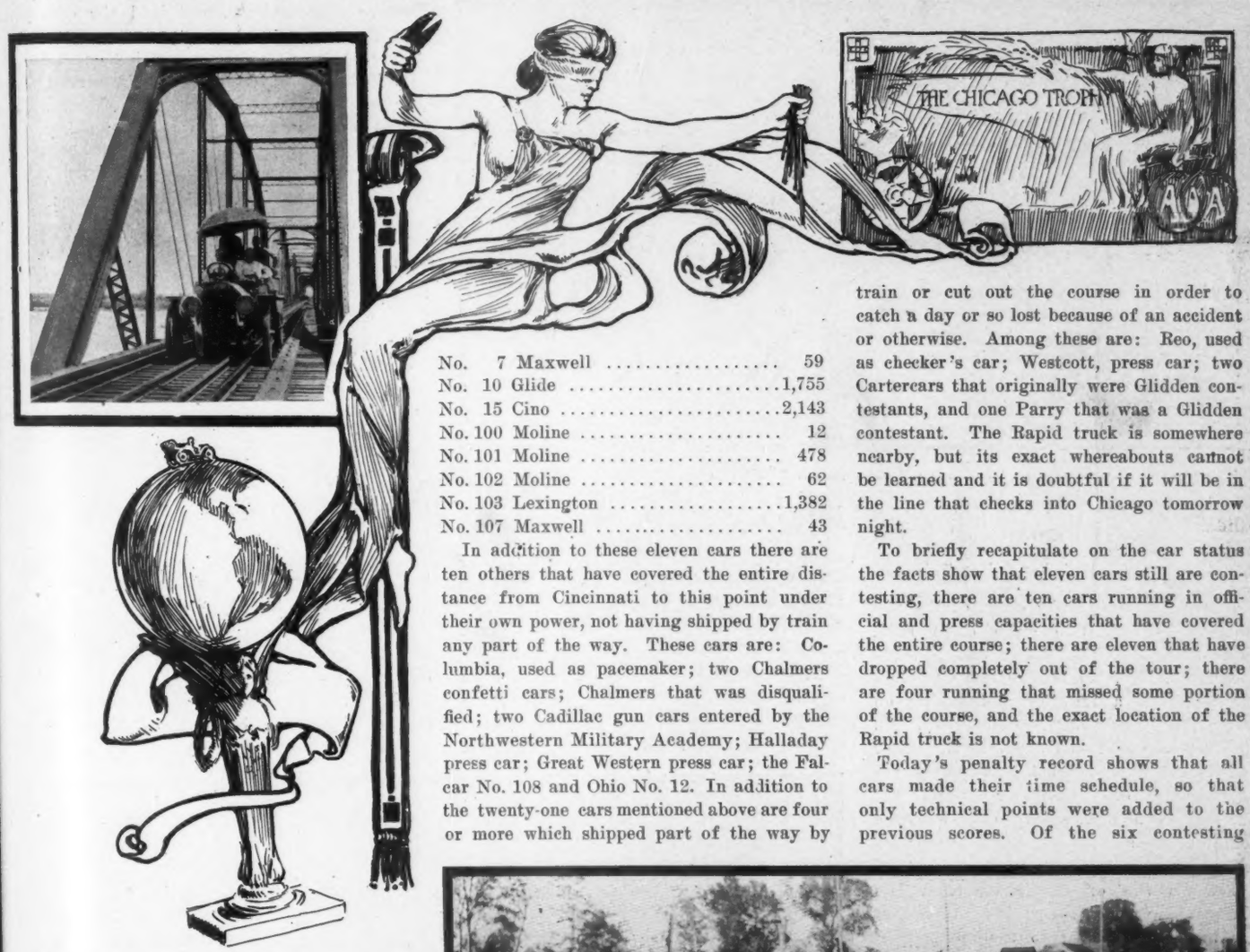
VOL. XVII, No. 26. CHICAGO, JUNE 30, 1910 $3.00 PER YEAR

MOTOR AGE

ON THE EVE OF THE FINISH OF THE GLIDDEN



DAVENPORT, Ia., June 29—Special telegram—With the Glidden and Chicago trophy tours for 1910 but 1 day more to run, the returns to date show No. 1 Premier leading in the Glidden and No. 100 Moline in the Chicago division. There only are eleven cars contesting at the present time out of the twenty-six that left Cincinnati nearly 3 weeks ago. The eleven cars and their total scores including penalties and lateness at controls is as follows:

	Points.
No. 1 Premier	9
No. 2 Premier	720
No. 5 Chalmers	39
No. 7 Maxwell	59
No. 10 Glide	1,755
No. 15 Cino	2,143
No. 100 Moline	12
No. 101 Moline	478
No. 102 Moline	62
No. 103 Lexington	1,382
No. 107 Maxwell	43

In addition to these eleven cars there are ten others that have covered the entire distance from Cincinnati to this point under their own power, not having shipped by train any part of the way. These cars are: Columbia, used as pacemaker; two Chalmers confetti cars; Chalmers that was disqualified; two Cadillac gun cars entered by the Northwestern Military Academy; Halladay press car; Great Western press car; the Falcar No. 108 and Ohio No. 12. In addition to the twenty-one cars mentioned above are four or more which shipped part of the way by train or cut out the course in order to catch a day or so lost because of an accident or otherwise. Among these are: Reo, used as checker's car; Westcott, press car; two Cartercars that originally were Glidden contestants, and one Parry that was a Glidden contestant. The Rapid truck is somewhere nearby, but its exact whereabouts cannot be learned and it is doubtful if it will be in the line that checks into Chicago tomorrow night.

To briefly recapitulate on the car status the facts show that eleven cars still are contesting, there are ten cars running in official and press capacities that have covered the entire course; there are eleven that have dropped completely out of the tour; there are four running that missed some portion of the course, and the exact location of the Rapid truck is not known.

Today's penalty record shows that all cars made their time schedule, so that only technical points were added to the previous scores. Of the six contesting

GLIDDENITES CROSSING RED RIVER NEAR TEXARKANA

TABLE SHOWING PENALIZATIONS IN THE GLIDDEN TROPHY CLASS

No.	Car	Driver	No. Cyl.	June 14 T.	June 14 C.	June 15 T.	June 15 C.	June 16 T.	June 16 C.	June 17 T.	June 17 C.	June 18 T.	June 18 C	June 19 T.	June 19 C.	June 20 T.	June 20 C.	June 21 T.	June 21 C.	June 22 T.	June 22 C.	June 23 T.	June 23 C.	June 24 T.	June 24 C.	June 25 T.	June 25 C.	June 27	June 28	June 29
1	Premier	McNamara	6	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0	0	0	0	0	0	0	0	2	29
2	Premier	Ballinger	4	0	0	0	46	0	0	4	82	91	9	0	0	10	0	0	0	158	72	99	57	0	0	0	0	18	114	0
3	Chalmers	Gardham	4	6	0	20	0	0	0	162	216	0	0	0	0	0	0	18	0	3	0	421	150	0	0	20	0*	.....	.....	.....
4	Chalmers	Matson	4	2	0	6	0	0	0	89	51	0	0	0	0	9	0	6	0	1012	..	‡	....	.....	.....	.....	.....	.....	.....	.....
5	Chalmers	Bolger	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	20	16	0
6	Cole	Knight	4	30	0	75	36	0	0	3	40	1000	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7	Maxwell	Wells	4	0	0	0	0	0	0	0	0	0	0	0	0	6	0	4	0	43	0	0	0	0	0	0	0	0	6	0
8	Cartercar	Mahoney	4	0	0	0	0	0	0	135	297	28	0	0	0	575	153	0	0	1000	..	.....	.....	.....	.....	.....	.....	.....	.....	.....
9	Parry	Dull	4	3	0	3	0	0	0	0	0	20	0	0	0	8	0	155	..	1000	..	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	Glide	Castle	4	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0	104	0	52	0	796	741	0	22	118	0	0
11	Ohio	Stockhard	4	0	0	75	60	0	0	..	42	114	0	18	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	Ohio	Hillock	4	0	0	100	11	0	0	48	276	1000	..	Runni	ng	as	non	co	ntesta	nt	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	Pennsylvania	O'Donnell	6	54	18	94	0	0	0	1338	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	Cino	Donnelly	4	0	0	0	0	0	0	0	42	0	0	32	18	45	33	1020	748	1	111	57	25	7	0	0	0	3	0	3

T—Technical Penalties C—Late at Controls *—Disqualified June 26 ‡—Running as a non-contestant and a confetti car

DIRT ROAD MAKES THE GOING GOOD

Glidden cars only one was debited, the unfortunate being No. 15 Cino that was assessed 3 points for adjusting a rocker arm.

In the Chicago trophy class, of the five competitors only two made clean runs, these being No. 100 Moline and No. 103 Lexington. No. 101 Moline lost 69 points for repairing a radiator and taking on water three times outside of controls. No. 102 Moline was taxed 3 points for water and No. 107 Maxwell lost 4 points for adjusting its oiler feed and 6 points for putting on a new spring clip where a combination spring clip and shock absorber attachment had broken.

Today's run of 220 miles from Des Moines here along the river-to-river road has brought the tour to the stepping-off point, there remaining nothing but the 180-mile procession into Chicago tomorrow, then the parade over the boulevards of the Windy City, and the tour will, as far as actual running is concerned, be a thing of the past.

The trip of today was a hot, dusty one from start to finish, and not comparable with that of yesterday. The roads were not in anything like the same boulevard-like condition, and for long stretches it seemed as if the inhabitants were not aware that a tour was passing through. There were some bright spots in the run, which greatly relieved the monotony. At Marengo, the noon stop, hospitality reigned supreme. The Business Men's Club furnished a hot dinner in one of the halls, the meal being served by the women. Thermos bottles were filled with lemonade, and, to finish the good cheer, every car was given a couple of the Chicago daily papers.

At Cedar Rapids, which was looked upon as one of the points of enthusiasm, the populace scarcely noticed the cars, and not a cheer was heard. At Iowa City the local motor club was busy, and held the cars up for a couple of minutes on the outskirts of the town while flags were tied on and sandwiches and refreshments were served. The greeting in West Liberty and all other places near Davenport was particularly hearty.

As on yesterday, so today, the number of cars seen that are owned by farmers, was heavy. The Halladay press car stopped at several points to inquire on this matter, and saw the new garages that have been built by the farmers for their cars, which in general range from $850 to $2,500. In fact, near Davenport the garage is seen at more than 25 per cent of the homes. In nearly every case the cars owned by farmers were run into a shady spot in front of the house and the entire family filled the tonneau and front seats. The tourists were constantly meeting cars on the route, though scarcely so many as yesterday.

The start this morning was at 6 o'clock, in order that the 18-mile-an-hour cars might check in before dark. Eleven contestants checked out this morning, and it is a safe assumption that all eleven will be on hand at the final checking in at Chicago tomorrow. As the scores of the day have not been given out, it is impossible to say which leads, but in all probability No. 1

PREMIER IN GUMBO BETWEEN WICHITA AND KANSAS CITY

TABLE SHOWING ENTRANTS AND PENALIZATIONS IN CHICAGO TROPHY CLASS

No.	Car	Driver	No. Cyl.	June 14 T.	June 14 C.	June 15 T.	June 15 C.	June 16 T.	June 16 C.	June 17 T.	June 17 C.	June 18 T.	June 18 C.	June 19 T.	June 19 C.	June 20 T.	June 20 C.	June 21 T.	June 21 C.	June 22 T.	June 22 C.	June 23 T.	June 23 C.	June 24 T.	June 24 C.	June 25 T.	June 25 C.	June 27	June 28	June 29
100	Moline	Van Dervoort	4	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	3	0	4	0	0	0	0	0	0	0	0
101	Moline	Wicke	4	0	0	0	13	0	0	6	27	14	0	0	0	192	50	0	0	3	0	0	0	21	0	74	0	3	6	69
102	Moline	Salisbury	4	0	0	0	2	0	0	0	23	0	0	0	0	3	0	6	0	3	0	0	0	15	0	4	0	0	3	3
103	Lexington	Moore	4	0	0	0	0	0	0	2	103	0	0	20	51	842	354	0	0	0	0	0	0	0	0	0	0	10	0	0
104	Cole	Martin	4	1042	0	0	103	0	0		230	1000	..																	
105	Parry	Neff	4	0	0	4	21	10	16	1000	..																			
106	Falcar	Van Sicklen	4	60	0	0	0	0	0	0	57	0	0	0	0	0	26			1000	..	†								
107	Maxwell	Illingsworth	4	0	0	0	0	0	0	0	0	0	0	0	0	11	0	2	0	0	0	0	0	0	0	0	0	0	0	10
108	Cartercar	Landsheft	4	0	0	0	0	2	0	143	216	405	..	896	..	1000	..													
109	Cartercar	Pendleton	2	0	0	46	510	40	237	1000	..																			
110	Lexington	Hays	4	4	0	0	95	0	0	1000	..																			
111	Westcott	Bevington	4	3	0	0	0	2	0	0	117	0	0	0	0	1000	..													

T—Technical Penalties C—Late at Controls †—Running as non-contestant

Premier will head the Glidden list, and No. 100 Moline the Chicago trophy class. Three or four of the contesting cars caught the pacemaker 50 miles out and it would seem as if control penalties for lateness will not be known today, as was the case yesterday.

Council Bluffs to Des Moines

Des Moines, Ia., June 28—Today has not been a tour in the temperamental sense of the term, but a triumphal procession half way across the state of Iowa, from Council Bluffs to this city, being practically 160 miles. The tourists followed the new river-to-river road, which threads its way across the entire state from Council Bluffs to Davenport, the total distance being 280 miles. This is not a new road, but a new name to a series of old roads. A few motor enthusiasts wishing to stimulate interest in good roads throughout the state, conceived the idea of selecting a great trans-state highway, and immediately settled upon the suitable name river-to-river, being between the Missouri on the west and the Mississippi on the east. The road is under the control of a complete good roads organization, which has its county management, the system being comparable to the section system used for railroad repair. So great and complete is the system that in 3 hours the entire 380 miles can be dragged after a rain by the now celebrated King drag.

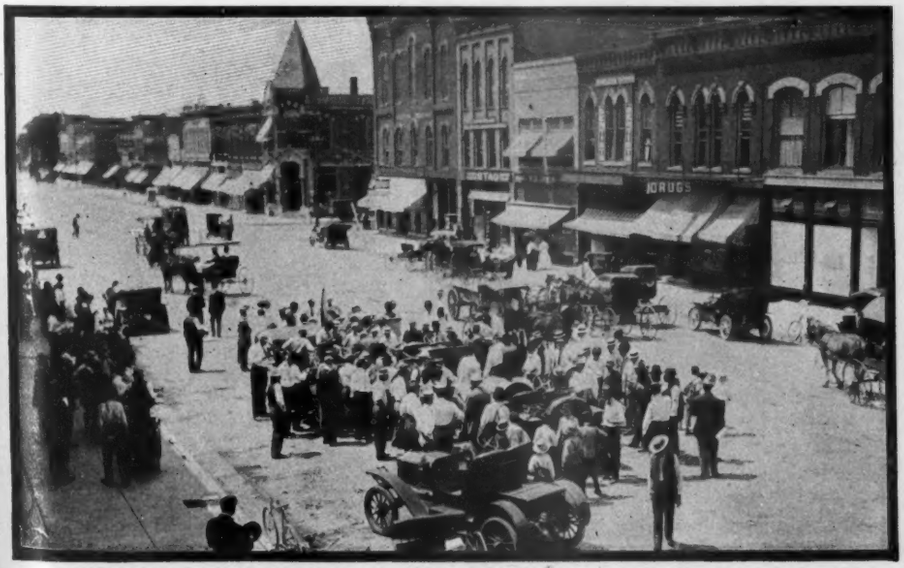
GLIDDENITES GLAD TO RUN INTO KANSAS

Never before in any Glidden tour has there been such enthusiasm as was evidenced today along this new river-to-river road. The road management had written every farmer living along the route, asking that national flags be used in decorating their homes, so that today's run was a 160-mile procession with an American flag tacked to alternate telegraph poles for mile after mile. At a dozen points streamers bearing the word "Welcome" were stretched across the road and there was scarcely a home but had big flags at the gate posts and others on the lawn. It was a gala day in every sense of the term for Iowans and Gliddenites.

But the enthusiasm did not stop with decorations. Every house had its lawn picnic, every shady cross road had a group of a dozen cars or more, and every shady riverside was a bristling picnic, all gathered to see the tourists. Cheers greeted every car from first to last, and not a farmer but waved his good luck from the farthest field on his farm. Tourists waved their salutations until arms were tired, but still the Iowa enthusiasm continued until the night stop was reached.

At Guthrie Center, the noon control, the motor association had rented an immense tent and placed it in a park on the roadside. All touring cars entered and then occupants were given a free lunch by the women of town. Meats, tea, sandwiches and ice cream were served. The stop was one of the pleasantest on the tour. When many of the other noon stops along the route are forgotten, Guthrie Center will remain fresh in the memory of all.

Today has been a genuinely motor car day, and has served to impress on the tourists the enormous numbers of cars owned by farmers. Reports are often



CITIZENS OF EMPORIA, KAN., GREET THE TOURISTS

heard that farmers are buying cars, but today's run proved it. The Iowa farmer is a wealthy individual, and if his corn crop this year is good it means that there will be a lot of its revenue spent for buying cars. As one farmer put it today, "If the crops are good we will buy cars, but we will want to get them in the fall. Farmers will spend the money for cars or new farm implements, and if the car man hopes to make the sale he must do it this fall, and not wait until next spring, when the money will have been all spent."

Today twenty cars were packed in one shady nook along a stream; over a dozen road corners were passed with five or six cars at each; and, most noteworthy of all, the horses today had not any fear of the cars, but were well acquainted with them.

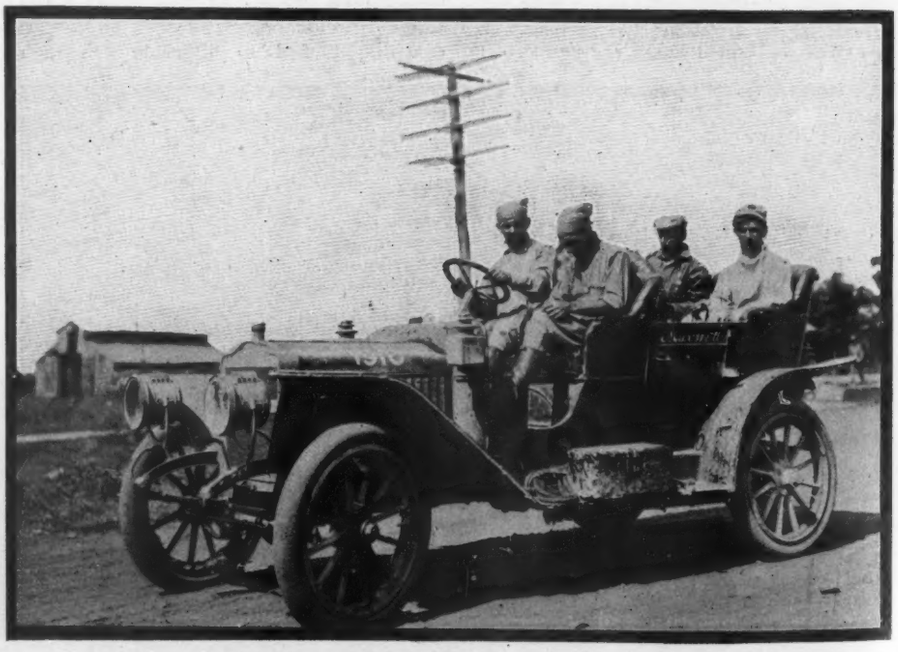
Today's run has been through one of the finest agricultural belts in Iowa, every foot of the soil growing its corn or other grain. The land ranges in value from $125 to $200 per acre, the homes are inviting, and it is questionable if any better market for the motor car can be found. Those makers not familiar with the Iowa situation are losing because of their ignorance, and should get into touch with the pulse of the industry in this great state. The farmers alone in this state could afford to buy 25,000 cars for 1911, with the crop prospect as at present. But in spite of the good roads today that were dragged for the special benefit of the tourists, only four of the eleven cars contesting had perfect scores for the day, these being No. 10, Glide; No. 15, Cino; No. 100, Moline, and No. 103, Lexington—two in the Chicago trophy and two in the Glidden trophy ranks.

No. 1 Premier, which is leading in the Glidden half of the contest, lost 2 points today for putting on a new fan belt. No. 5 Chalmers, which was leading until Saturday, lost 16 points for tightening a valve cap and adjusting a valve-lifter rod. No. 7 Maxwell had to fit a new spring clip on the front spring, the clip taken off being one made specially for fitting shock absorbers with. Two cars to lose in the Chicago trophy class were Molines Nos. 101 and 102, the former getting 6 points for taking on water twice outside of controls and the second losing 3 points for the same reason. No. 107 Maxwell lost 20 points in checking out of the control this morning. The motor could not be started, and after considerable work Driver Illingsworth discovered the coil was useless and had to get a new one. This concluded the penalty toll for today, excepting No. 2 Premier, which was overlooked. It received 114 points for replacing a left front spring. Taking all things into consideration, this is a pretty heavy score for the day, but must be expected in view of what the cars have been subjected to since the start of the tour.

Kansas City to Omaha

Omaha, Neb., June 27—Today's long run of 242.3 miles from Kansas City here by way of St. Joseph, Mo., has been a record day in more respects than simply that it is longest daily mileage of any Glidden tour todate. In addition the variety of road and weather conditions constituted a very unique factor. Last night a thunder storm raged incessantly in the Kansas City territory and when the tourists sat down to breakfast at 3:30 this morning in Hotel Baltimore, so as to be ready for a 5 o'clock start, it looked as if the entire tour might peremptorily end by the way in which the water was descending. The rain ceased at 5 and the start was made, Dai Lewis, in the pilot cars, having left with special guides at 3 o'clock. The first 15 miles were pike roads over which a schedule of 20 miles per hour could be maintained whether it thunderstormed or not; but after this came 7 miles of the greasiest gumbo a national tour ever has encountred and had there been more of it the tourists would not have been here tonight. Those 7 miles were enough and through it the cars crept at a 7-mile-an-hour pace resembling lazy insects as they were strung out along the road. They skidded into the ditches and got crosswise of the road in the most mysterious manner. It was nearly a case of give up when the stone road leading the remainder of the 5 miles to Fort Leavenworth was encountered and with those stones the worries of the day ended. After the stone road came 6 miles of brick pavement—right through the country in the proximity of the famous federal prison—and with this brick passed the limit of the storm's zone of activities was reached and soon a curl of dust was seen following each of the cars. From this

WESTCOTT PRESS CAR ENCOUNTERS SOME BAD ROADS



AS THE MAXWELLITES LOOKED CHECKING IN AT TERRAL

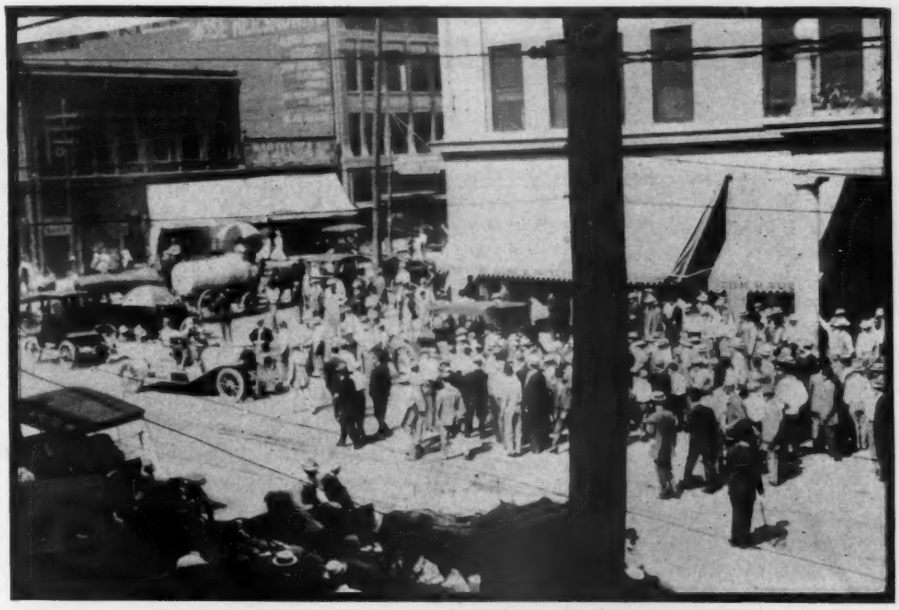
point, 32 miles out of Kansas City to Omaha, not a symptom of the greasy gumbo was encountered, in fact, better roads could not have been desired. In the majority of cases they are excellent dirt roads that have been dragged since the last rain so that they are more pleasant to ride on than the best macadam available and they are much easier on the tires of the cars.

The tour is unique today in that it has embraced four states, starting in Missouri, then crossing into Kansas and later running through a portion of Iowa and ending up in Nebraska. Out of Kansas City the pike road is nothing but a giant rollercoaster, being up and down hill continuously with each ascent and descent approximately ¼ mile. Through that section of Missouri passed through, including Savannah, Maryville and Burlington, this rollercoaster road continued and after the state line into Iowa was crossed much the same condition ruled. It is questionable if more fascinating roads to travel over could be obtained. No sooner did the car reach the top of a ¼-mile slope of 8 per cent grade than it started down an equally long one and often when on the top of one, miles of road could be seen ahead lying in long undulations like a mighty ribbon stretching over the country-side. As Iowa was invaded the physical features of the land varied, becoming flatter at Tabor and Savannah, but again reaching the disturbed condition before entering Council Bluffs.

Not since the tour began has there been a more general holiday along the line of route and never before have so many motor cars been seen around farms and along the streets in the villages. In one small town thirty cars were counted in the streets. At one farmhouse were seven cars of all types bunched to see the tour go by. At road crossings three or four cars were in a place and in truth for miles today the tourists never lost sight of cars along the roadside for a single moment. This territory has been one of the big market spots of the last season and it proved a big one this year.

The penalty chart today is a small one, but some penalties are important in that they alter the order of things. Owing to No. 5 Chalmers, driven by Bolger, being assessed 20 points for putting in a new part in the steering connections, No. 1 Premier steps into first place so far as the technical and control penalties up to date are concerned, the Chalmers having held this honor until today.

In the Chicago trophy division the order of standing as announced in Kansas City, in which a Moline led No. 107, Maxwell, driven by Illingsworth, remains unchanged. In addition to the Chalmers No. 5, the other cars to be penalized were: No. 2 Premier, 18 points for a new spring clip and fitting the same; No. 10 Glide had to replace a spring which had crystallized, and received 118 points for this and tightening a fan belt; No. 15 Cino was taxed the customary 3 points for taking on gasoline outside of noon or night control, and the same score was marked against No. 101, Moline, which took on a few miles out of Kansas City, the supposition being that there was some misunderstanding regarding filling the tanks in Kansas City. No. 103 Lexington broke its long list of clean-score daily runs by having to adjust the carbureter when battling with the 7 miles of gumbo this morning outside of Kansas City, and also for tightening a lamp bracket, the total count against the car today being 10 points. With six of the twelve competing cars penalized, it remains to be seen that six had clean scores today. Not a car lost points on time today, due to the liberal running schedule. In the midst of the rain it looked as if 16 and 18 miles per hour were too fast, but when the gumbo was passed it was a parade to the finish, some of the cars being more than 2 hours ahead of schedule.

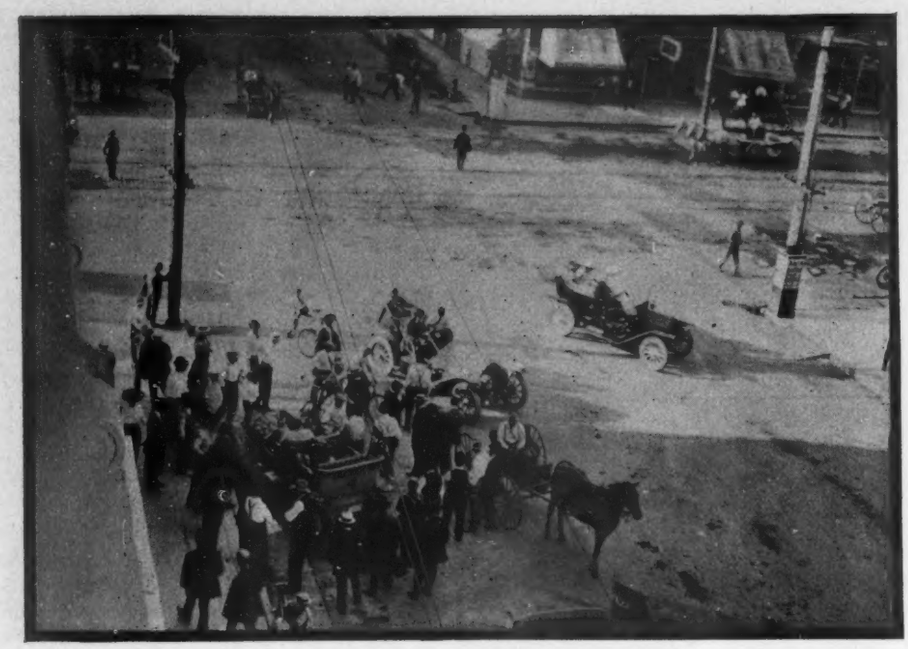


CROWDS GATHER TO SEE CARS AT OKLAHOMA CITY

GLIDDEN COLE CAR CROSSING ONE OF THE RIVERS

Sunday at Kansas City

Kansas City, Mo., June 26—Today has been house-cleaning day with Referee Whiting in the matter of business pertaining to the tour. Owing to the long daily runs and the late night arrivals at controls it has been impossible to have a meeting each night to take up matters in dispute. To date two protests have been entered, one by the Premier company against being assessed 3 points for taking on water on the ground that as the Premier car was acting as confetti car it was due to such duties that water had to be taken on. The referee allowed one filling of water on this score, but refused to allow a second one. A second protest



No. 1 Chalmers in the Town Square at Wichita, Kan.

was from the Maxwell entry against being penalized for replacing a spring clip which also served as a part of the shock absorber attachment. The protest was withdrawn.

A little flurry was caused Sunday morning when Max Parry, of the Parry Automobile company, announced of his intention to issue an injunction to stop the tour on the ground that the referee was refraining from penalizing certain entrants. Notices of this were served by Mr. Parry's attorney on several of the officials. It developed during the day that Mr. Parry had gone to a federal judge to have the injunction granted, but that this judge on three occasions had refused to grant it, so that the matter apparently was dropped. Since then the contest board has disqualified the Parry car, running as a non-contestant in the tour, and a notice was posted by Chairman Butler tonight disqualifying the Parry Automobile company from entering future sanctioned contests until further notice.

Wichita to Kansas City

Kansas City, Mo., June 25—Today saw a new record set in national tours in America and in the entire motor world, namely, a tour covering 234.5 miles in 1 day. There have been longer day's runs than this in local tours. For example, the Chicago Motor Club had a run of nearly 260 miles in one day, but the duration of the tour was only 1,000 miles, whereas the present Glidden-Chicago tour is over 2,800 miles, half of which has been over execrable roads. The start in today's run was made by five cars competing for the Glidden and five for the Chicago trophies, all of which pulled out of Wichita at 6 this morning and No. 1 Premier arrived first in company with No. 15 Cino, both of whom checked in at 5:48, although not due on the schedule until 1 minute after 8. From the time these two cars checked in until 10:18, the time of arrival of No. 101, which had tire troubles, the cars checked in at varying intervals, ranging as follows: No. 2 Premier, 7:25; No. 3 Chalmers, 8:15; No. 5 Chalmers, 7:26; No. 7 Maxwell, 7:03; No. 10 Glide, 8:02; No. 100 Moline, 8:47; No. 102 Moline, 8:52; No. 103 Lexington, 6:28; No. 107 Maxwell, 6:31.

In spite of the 6 o'clock start, those cars arriving after 8 o'clock this evening had just enough daylight to reach the suburbs so that it already has been decided, in the 142.3 mile run Monday from Kansas City to Omaha, Neb., to start at 5 o'clock so all cars will have an opportunity of arriving in time.

In addition to the twelve contesting cars in today's run there were two press cars, the Halladay and the Great Western. The Halladay had a bad skid on a highly-arched gumbo road 100 feet wide and ran into a ditch, springing the front axle slightly, but it was repaired and reached this city a little behind the contesting cars. The two Cutting cars and the Westcott press car are expected to join the tour here and make the run into Chicago. Yesterday one of the Chalmers confetti cars, which has been lagging behind after undergoing repairs in Dallas, caught up with the tour and will continue as assistant pilot to Chicago. It is reported here also that the Reo, which has been behind since Hot Springs, will be ready to check out Monday morning on the 4-day run to Chicago. Charles F. Van Sicklen, driving No. 106 Falcar, which broke a spring seating on the rear axle entering Dallas, caught the tour Friday night and is running along as a non-contestant. Van Sicklen suffered hard luck. He wired Dallas for a repair part which was taken out in a motor car, but the car lost its way and had so much tire trouble that Van Sicklen could not check into Dallas before the tour checked out on the following day, and so had to automatically withdraw. If the part had not been sidetracked he would have been enabled to continue as a regular contestant. The two Cadillac gun cars are along with the tour, but the Rapid truck has not reported as yet in Kansas City. This sturdy wagon which was a regular companion of the tour until the troubles with sink holes in the road and ferries was experienced, is missed. Never before has there been a national tour in which it has been so hard for cars getting a little behind to catch up. In previous tours there has invariably been a 2-day stop for Saturday and Sunday each week, but this year Sunday is the only stop and the mileage each day is greatly in excess of former years, which fact makes it necessary to do night and day driving when once in rear of the tour

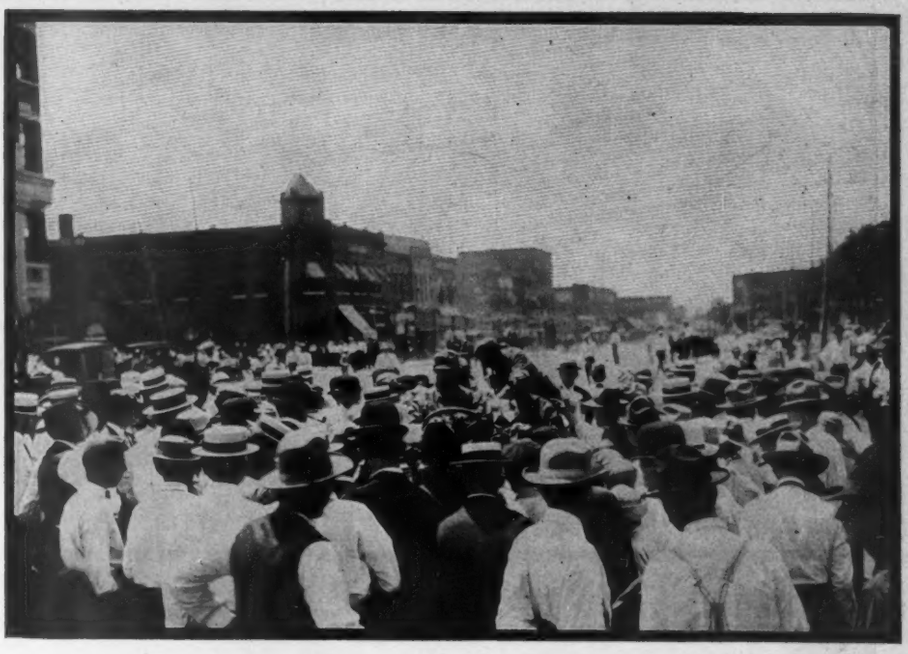
Some Excitement is Aroused by Tourists at Paris, Texas

itself. Yet another factor in delaying cars catching the tour has been the ferry situation. Crossing the Mississippi at Helena the ferry made but two trips, one in the forenoon and the other at 4 o'clock in the afternoon, so that if a car missed the forenoon ferry by 5 minutes it was compelled to wait 6 hours for the next ferry which put him into the dark and made it an impossibility to catch the main tour. This ferry situation worked particularly against the Rapid truck.

Of the twelve contestants, nine made the run with clean technical scores and three were penalized. No. 3 Chalmers, driven by J. Gardham, received 20 points for replacing a small pin in the gearshaft connections, requiring 10 minutes for the work. No. 101 Moline was assessed 74 points for soldering a small leak in the radiator, it requiring one man 74 minutes to do the work. No. 102 Moline received 4 points, 3 for taking up some play in the steering gear and 1 point for loosening it a little. This is a small penalty score for such a long day's run.

Today's run from Wichita was by way of Peabody, Cottonwood Falls, Emporia, Ottawa and Olathe, entering Kansas City by way of Merriam and Rosedale. Like yesterday the roads in general were good, excepting for local thunderstorms, which fell in half a dozen places. A car would run into a storm; there would be a call for raincoats and in 5 minutes the burning sun would be roasting everybody. For 5 miles the roads would be as black as ink, chains had to be used and then the car would slip all over and in some cases had to be hauled by horses. A little further on the car would be smothered in dust. This condition of affairs made running slow, there being many stops to put on and take off tire chains.

From a standpoint of roads, they were excellent except where the rain fell. In places the route directions read "straight ahead for 14 miles with a cross road every mile." On these stretches the speed limit was the possibilities of the different cars, but in all cases it was rare that a car traveled at more than 30 miles per hour. The drivers are playing a very conservative game and are not taking any chances on high motor speeds.



CROWDS TURN OUT TO SEE TOURISTS AT ENID, OKLA.

Oklahoma City to Wichita

Wichita, Kan., June 24—Twelve contesting cars started out and finished in today's run of 216 miles from Oklahoma City here and of these twelve, seven are Glidden contestants and five are contending for the Chicago trophy. Of the twelve, seven made perfect technical scores, these being No. 1 Premier, No. 2 Premier, No. 3 Chalmers, No. 7 Maxwell, No. 100 Moline, No. 103 Lexington and No. 107 Maxwell.

Today saw the last perfect road score in the tour pass out of existence when No. 5 Chalmers, driven by W. Bolger, broke a fender iron at 1,689 miles from the start at Cincinnati. The fender iron had crystallized and broke with the car traveling at about 15 miles per hour over a smooth road. Bolger immediately stopped and wired it up, being taxed 3 points, or a point a minute for the work. In spite of this the car at present leads in the fight for the Glidden trophy, but the end is not until after the technical examination at Chicago, so it is very problematical as to where the coveted trophy will go.

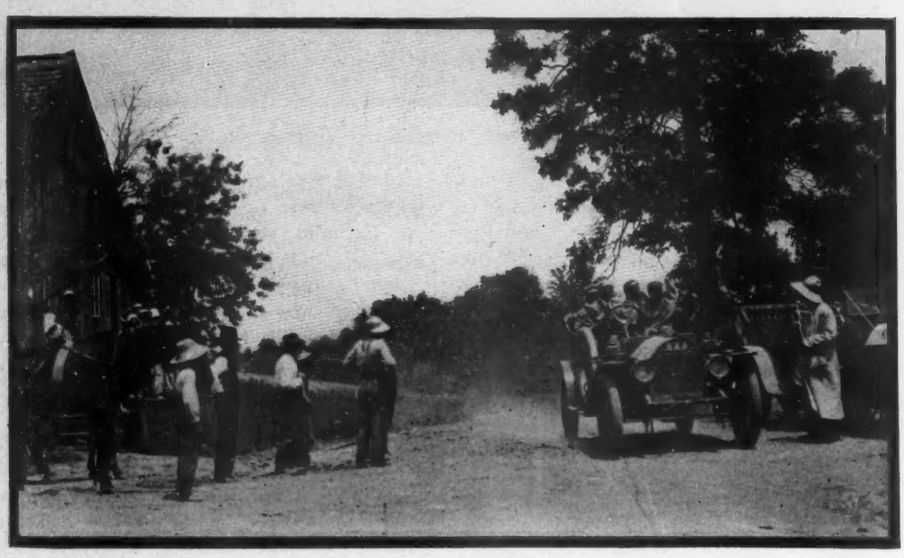
Four other cars had misfortunes today which brought penalties against them. No. 10 Glide broke a part of the rear axle housing near Enid, 100 miles out. Another part was secured in Wichita and hurried to the scene, so that it was 8 a. m., June 25, before the car checked in here. Its penalty for lateness appears on the chart in this issue.

No. 15 Cino received 7 points for repairing a broken spring. In the Chicago trophy divisions No. 101 Moline took on water seven times because of a leaky radiator and received 21 points. No. 102 Moline lost 15 points for soldering a radiator leak.

Today's run of 21 miles has been one of the best in the tour from a road point of view. The route has been over the red clay soil of Oklahoma and the gumbo lands and red clay of Kansas. In places the route was straight as an arrow for 15 miles at a time and the surface as level as a table. At other points the cars followed section lines and had to make a right angled turn ever mile which considerably lowered their pace. The start was made at 6 o'clock, Ray MacNamara

GLIDDEN CARS AS THEY WERE PARKED AT DALLAS

MOLINE SKELETON TOP APPRECIATED IN OKLAHOMA



ONE OF THE COLES PASSING THROUGH A SETTLEMENT

with his six-cylinder Premier getting away followed at minute intervals by Jesse Illingsworth in No. 107 Maxwell, J. C. Moore in No. 103 Lexington, No. 10 Glide driven by F. Cassel, No. 7 Maxwell driven by Walls, No. 5 Chalmers driven by Bolger, and the others in regular order, the Molines starting last.

Today saw the invasion of southern Kansas by the tour and those who were present in last year's tour when it crossed this state from side to side immediately recognized the vast undulating plains, every foot of which was covered with grains of some sort or another. The route lay through Britton and Edmond out of Oklahoma and thence to Guthrie, the original capital of the state, but which lost out owing to the phenomenal enterprise of the boosters in Oklahoma City. A point of interest also to all in the tour was passing the 101 ranch of Miller brothers, which has been familiarized all over the country by the wild west shows bearing this name. Today's run embraces much ranching country, and the reader who never has seen a ranch must not imagine it to be one vast plain of grass as far as the eye can see and beyond over which cattle roam, but rather a great big area of agricultural land, with wheat in one place, corn in another and other grains. If the tourist had not been told it was a ranch he never would have known it, because it resembled any of the many large farms alongside the route, with an occasional large herd of cattle.

Saying that every square foot of land in Kansas can grow wheat or corn is not a very great exaggeration, although there are sections in the state where the land is fairly rough and limestone rock juts out through the green grass. With the agricultural possibilities of this state as they are, there is literally no limit to the selling possibilities of the cars in the state. Today farmers were met every few miles driving their motor cars and they were not all $800 cars as many might imagine, but cars running as high as $4,000 were met in the midst of the vast ocean of agriculture through which the cars passed today.

In a general summing up tonight it could not be overlooked the manner in which the cars entered are performing. For example, the three Molines entered are still running as contestants with certain penalties. All three of the Chalmers cars were running until at Lawton when Manager Bill withdrew No. 4, driven by Joe Matson, and made it pilot car because of the two other Chalmers pilot cars being disabled at that time. The two Premier cars are still running, the both Maxwells are right along on schedule every day, the one Glide entry is still running, the one Cino is running and one of the two Lexingtons remains. This makes the dozen out of the twenty-six competing cars that started and shows that the entire entry of each of the makes above mentioned still is in the contest except the case of the Lexington two-car entry, one of which broke a steering part on the run into Memphis when passing through the bad roads. This fact may be interpreted as indicating that these concerns are all, with the exception of the Cino, experienced in road contests of this nature and undoubtedly had their cars and drivers better fitted for the fray than several of the others who were competing in a long realibility contest for the first time.

Lawton to Oklahoma City

Oklahoma City, Okla., June 23—Twelve cars reached this city this evening in the Glidden and Chicago trophy competitions, there not being a single case of falling by the wayside and it would appear that once Dallas, the turning point of the run, has been passed that there is good chance for nearly all of the twelve cars that checked in here tonight reaching Chicago. Five of these twelve had penalties charged against them today. No. 2 Premier lost 99 points in working on its steering gear, the work consisting in taking off the third arm of the steering gear, brazing the arm at one point and replacing it. No. 3 Chalmers had a somewhat peculiar condition tonight. After checking into the night parking station Driver Joe Gardham asked permission of the referee to leave the parking station to have a fender iron welded at a blacksmith shop. Permission was granted to do this, but the car was out of the checking station for over 3 hours and when it finally checked in after

Court Almost Ready to Act

New York, June 29—Special telegram—At a well attended meeting of the Association of Licensed Automobile Manufacturers yesterday, it was reported that the final hearing on the interlocutory decree before Judge Hough in the Ford and Panhard cases has been definitely fixed for the morning of July 19. The testimony on both sides in the supplemental bills and answers has been closed ,and now only awaits the hearing of the application for the entry of decrees.

Aside from routine business, there was a general discussion of trade conditions, which showed a continuance of the healthy demand

8 o'clock it was noted that a great many repairs had been made which had not been covered in the referee's permission and the matter is scheduled to be investigated in Wichita tomorrow night. According to the rules disqualification is the penalty for such work. It is apparent that a misunderstanding occurred regarding the permission given, but that will not likely have much bearing on the matter of deciding the case.

Two other Glidden trophy aspirants had black marks chalked against them today. No. 10 Glide received 52 points for a clogged gasoline line, the driver taking a ball of waste ½ inch in diameter out of the gasoline tank. It is a mystery how it found its way into the tank, the supposition being that the driver may have line tank to get gasoline to prime his used a piece of waste to dip into the gasocylinders. No. 15 Cino ran in more hard luck, receiving 57 points for adjusting a valve rocker arm on the motor and putting on a new rear wheel. Of the five cars fighting for premier positions in the Chicago trophy only one got its total increased, this being No. 100 Moline which received 4 points for tightening the supporting feet on the bottom of the radiator.

The object point of today's tour, namely Oklahoma City, was looked forward to with greater interest than any other city on the complete circuit for this season. Last night the stop was at Lawton, a city of 15,000, the site of which 8 years ago was an endless field of grass, the top of which had to be cut off in order that the surveyors laying out Lawton might be able to do their work. Today the city is pushing ahead. This Lawton situation but whetted the appetites of the tourists regarding Oklahoma City, with its population of over 70,000 and having more than a dozen skyscraper buildings, one of which was put up in the record time of 56 days. Oklahoma City has a board of trade. In fact, every business man, it is stated, must by compulsion be a member of this board and if he is not contented with the condition of affairs it is ten to one that the other business boosters of the place will get together and buy him out. This actually has been done in not a few instances within the last year. If all other factors in the development of this new city were as potent as the army of business boosters there is no reason why the city would not within a century be one of the leading cities of the country. This boosting spirit has a direct bearing on the motor car interests in and around Oklahoma City in that the patriotism of the citizens is so great that branch houses must be established there with a territory embracing the entire state and whatever of adjoining states can be had. The Oklahomans are not contented to be counted in in the Kansas City territory; they want a distributing center of their own and owing to this patriotic spirit sales managers of some companies are at present arranging for Oklahoma City branches for handling their trade.

All of the state as passed through today can be described as endless agricultural tracts. The roads through the state are like those in all other western states, namely, excellent in dry weather and impassable in bad weather. It is a great pity that these gardens of the earth, from an agricultural viewpoint, should have such roads. The roads in this state should be the equal of those in any other state in the union. Owing to the large deposits of rock asphalt plenty of paving material for the city streets is at hand, but this is too luxurious for country roads. Oklahoma City has more miles of paved streets per population than any other city in the land.

Shortly after checking out of Lawton this morning the route led past, in fact through, the Fort Sill Indian reservation, at which point the government is expending immense sums of money annualy. Lawton is a government site and before long it will be one of the big centers in southern Oklahoma. The interest taken by the Oklahoma City motorists was such that several of them made the complete run of 145 miles to Lawton to meet the tour and give all possible information regarding the roads. At one point where the Canadian river is crossed these people had cut green grass and strewed it over the sand in the river bed so that the cars could pass over it. This is only one of the many examples that might be cited regarding the enterprise of the citizens of this marvel of the west.

CARS RUNNING ON RAILROAD TRACK NEAR TERRAL

CADETS IN CADILLAC PASSING THROUGH HONEY GROVE, TEXAS

in the Selden Patent Case

for motor cars—that now are such an essential part of American life, and particularly a strong demand for freight-carrying cars. Reports and figures of the manufacturers indicated very clearly the reason why bankers and railroad men have been decrying the buying and using of motor cars.

The executive committee of the association held its meeting on Tuesday, while there also was a meeting of the directors of Association Patents Co., at which Alfred Reeves was elected secretary and treasurer in the place of Coker F. Clarkson, who resigned to become secretary of the Society of Automobile Engineers.

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Car Strongest In Its Weakest Part

THE strength of a car is the strength of its weakest part. The old adage that the strength of a chain is the strength of its weakest link can be adapted to the motor car industry with equal apropriateness. Nothing is truer than that a car is only as strong, is only as reliable, is only as proof against breakages as the weakest part in the car is proof against such defects. Some makers seem to think that a car is only a motor and spend all of their energy designating and manufacturing a motor, and are content to use anything they can get in the way of ready-made parts for axles, frames, steering gear and wheels. After the car has been on the road for a month or so the manufacturer discovers that the universal joints used are too light for the strength of the motor, the braking surface is not adequate to the power of the car, the bearings are not equal to the strains that the power plant can impose on it, and there are a dozen other cases where the engineering equation of the machine is not a balanced one.

WHAT is the use of a great, powerful motor with a gearbox so weak that its only apparent use is to be broken by the more powerful motor at the first instance the occasion arises? There is no value in stout frames unless the front and rear axles are proportionately strengthened, a clutch for a 60-horsepower car is uselessly fitted in a 40-horsepower chassis when the other parts in the chassis are for 40-horsepower construction. This lack of due proportion is one of the greatest curses in many of those cars which are largely assembled propositions, with a motor secured in Indiana, a gearbox in New York, a rear axle in Wisconsin, a frame in Pennsylvania and springs in Illinois. The folly of this ill-proportioned combination of parts is shown when breakages occur. All things being equal, the weaker parts break first and when a functional part breaks the car is tied up.

IT often wastes more time of a tourist going from New York to Atlanta to have one unit of the coil fail to work than it does to spring a front axle. The axle can be repaired in any blacksmith shop or the machine shops of the various towns and cities through which the tourist is passing, but not so with the coil; it is a delicate winding and rarely can be repaired unless returned to the factory. While a new unit is being secured the car is held up by the wayside just the same only longer than if an axle were sprung. Time is the prime factor in transportation and if a man leaves Detroit to reach Toledo it matters little to him if he is held up for 1 hour due to a breakage, whether that is connected with the motor, the rear axle or a fender. The weakest part of the car can detain him just as long as the biggest part.

THE fact that small things can be as annoying as big things when they go wrong has been demonstrated time without end in the many reliability tours that have taken place during the last few years. Where cars are penalized a point a minute for being late, the final score is not changed by the fact that all the troubles were due to small parts going out of commission. It is just as annoying to have a throttle or carbureter connection break, causing a delay of 20 minutes, as it is to have a similar delay caused by a bracket or some other part breaking. In the eyes of the public a delay of 10 minutes makes 10 points, whether that delay is caused by the motor or the brakes. In a day's run if a car has to stop six different times to take on water, it is equally as annoying as to have to stop six different times to repair a slipping clutch or to adjust brakes. How does a manufacturer profit by entering a car in a big contest if his steering gear is so weak as to be certain to give trouble, if his spring shackles are too weak for the load and road conditions, or if the petcocks are poorly inserted and give daily troubles? Any car is judged by its dependability and that total dependability of the car depends on the reliability of the several units making up that car, whether the units are of the necessary status. A fender constantly shaking loose and rattling frequently will create greater discontent and make the car appear poorer in the minds of the public than a car which has a slipping clutch. When it comes to the reliability of the car it is as great a delay to lose 30 minutes due to having to adjust a rear wheel bearing that has a poor locking arrangement or the bearing as it is to have to take up a connecting-rod bearing during that time. This case of dependability permeates every detail of the car construction from the largest to the smallest part and a derangement of one functional part will cause a delay equal to a derangement of some other functional part which may appear to be of vastly greater importance.

HAND in hand with the dependability of car parts comes that of the accessibility of parts; that is, parts that have to be adjusted from time to time. Cars are now running and of 1910 model in which a car wheel has to be removed to adjust the brakes. On some motors there are glass oil gauges showing the oil level within the crankcase, but the height of oil in these gauges cannot be seen without holding a lighted match down by the side of the crankcase and within a few inches of the carbureter. This is exceedingly dangerous practice, but in addition, what is the use of locating a gauge where it cannot be seen? This is equally true with respect to means for draining dirty oil from car parts whence it should regularly be drained. Cars are competing in the present Glidden tour in which, before oil can be drained from the crankcase, it is necessary to remove the mud apron or cut a small hole in it under the drain cocks. This done, it requires the workman to lie on his back under the car and to take a hammer and drift in order to remove the plug from the drain opening. In contrast with this are other cars from the motors of which the oil can be drained by operating a small lever on one of the motor arms, this lever controlling the petcocks in the motor compartment.

IN order to adjust the clutch, one maker has made it but necessary to lift the floor boards and turn a series of wing nuts, but to accomplish this same result on another car it is necessary to remove certain parts of the mechanism and to get inside of the housing, being a job of an hour's duration. Whether the owner of the car, his driver or a repairman in a garage makes the adjustment requiring an hour, it means money, because a repairman will not work an hour for nothing. And, if the repairman has to put in more than an hour for nothing, and if the owner has to put in more than an hour on such work, it is costly in patience, in clothes and also in time spent that otherwise would have been devoted to some other utility perhaps. The economical car is bound to be the ultimate car and the economical car always will be an accessible car. It is a pity that designers and factory superintendents do not drive cars more themselves in big contests, so that the accessibility factor would be more impressed upon them.

JULY SPEEDWAY MEET ATTRACTS MANY CARS

INDIANAPOLIS, Ind., June 29—Entries for the July meet of the speedway are coming in rapidly and the indications now are that a more representative lot of cars will face the starter on Friday and Saturday of this week and on the national holiday on Monday than ever before has been attracted to Indianapolis. Of course the Cobe cup race on Monday will be the star attraction of the meet, because of its historic value. The Chicago Automobile Club will be in charge that day and it is expected that a large delegation from Chicago will be in attendance. The lists do not close until tomorrow and it is probable that several more cars will come in, but at the present writing there are seventeen nominated for the Cobe. These include: H. F. Grant in an Alco; Harroun and Dawson in Marmons; Aitken, Kincade, Greiner and Tousey in Nationals; Frank Fox in a Pope; three Marquette-Buicks, two of which will be driven by Burman and Chevrolet; two Great Westerns, two Black Crows and two Falcars. There entering. The G & J trophy will be run on Friday, the distance being 50 miles and the cars eligible being of the 231-300 class. Named for this are the Pope-Hartford and two each of the Great Western, Black Crow, Marmon, Buick and Falcar. In the free-for-all on Friday Aitken in the National, Zengel in a Chadwick, Hearne in a Benz, Burman and Chevrolet in Buicks and Ireland in the Stoddard-Dayton are entered. In addition to these cars there are sentries In addition to these cars there are entdies in from the Empire, Herreshoff, Fuller, the Cobe cup race the Bosch Magneto Co. has offered cash prizes of $300 for first, $200 for second and $100 for third, providing the cars holding these positions use Bosch magnetos.

OLDFIELD BREAKS RECORDS

Minneapolis, Minn., June 25—Circular track records were smashed on 3 of the 4 days of the aviation meet which was held here Wednesday, Thursday, Friday and today of this week, Barney Oldfield in the big Benz being the hero. On Wednesday, the first day, Oldfield went after the 2-mile mark, which he negotiated in 1:40, the first mile being done in :49⅘ and the second in :50⅕, both of these times being inside the previous record for the mile, which stood at :50⅘ and which was made here last year by de Palma in the Fiat. The 2-mile mark that was smashed formerly was 1:44⅕, made by Oldfield at Los Angeles. Another record to be smashed was the 3-mile, which went to Kerscher in the old Vanderbilt Darracq. His time was 2:36⅕, which beats the former record of 2:38⅘, made by de Palma here last year. In addition to the record-breaking on Wednesday there was a match race between Kerscher in the Darracq and Harroun in a Marmon. The distance was 5 miles and Kerscher won in 5:05⅘. Oldfield in the Knox won the 5-mile free-for-all in 10:14⅘.

On Thursday, Oldfield, not satisfied with his mile record, went after it again in the Benz and dropped it to :49⅖, where it now stands. The racing this day consisted of the 5-mile free-for-all handicap, which was won by Harroun in a Marmon in 4:50⅕, with Oldfield in a Knox second, and a 10-mile match race between McLane in a Buick and Harroun in a Marmon, which was won by the latter in 11:02⅖.

The meet saw another record smashed Friday, when Oldfield drove 4 miles in 3:24, which is 10⅕ seconds better than de Palma's old record. In this drive Oldfield averaged 51 seconds to the mile. Rain today prevented the use of the mile track, and this, of course, put an end to the record-breaking. The ½-mile track was used and Oldfield contented himself with an exhibition drive, while Harroun added another race to his credit.

Cobe Cup Race on the Fourth Will Be Feature of the 3-Day Program-G & J Trophy Booked

HILL-CLIMB AT PITTSBURG, IND.

Pittsburg, Ind., June 15—The hill-climb that was held here yesterday was a success, three events being run, two of which were won by the Buick and the other by the Maxwell. The distance was ½ mile and from a flying start, the grade being 8 per cent at the take-off. Summaries:

$750 AND UNDER

Car and driver	Time
Maxwell, Reeser	1:30
Maxwell, B. O. Benn	1:39½

$751 TO $1,000

Buick, Gardner	:57
Buick, R. R. Penn	:58 ⅖
Ford, Bartee	1:00¾
Ford, Ryan	1:03¾
Ford, Grider	1:05
Ford, Elkenberry	1:10
Overland, Gardner	1:14⅘

$1,001 TO $2,000

Great Western	:48¼
Buick, R. R. Penn	:50⅕
Buick, R. R. Penn	:52⅕
Buick, A. Dunn	:53⅕
Ford, Grider	:55⅖
Ford, Ryan	:59⅘
Oakland	1:03
Buick, R. R. Penn	1:06

July 1-2-4—Speedway meet at Indianapolis.
July 1-10—Road carnival of licensed dealers at Los Angeles, Cal.
July 2—Reliability run of North Wildwood Automobile Club, Philadelphia.
July 4—Track meet of Motor Club of Wildwood, N. J.
July 4—Track meet of Dallas Automobile Club, Dallas, Tex.
July 4—Track meet of Cheyenne Motor Club, Cheyenne, Wyo.
July 4—Hill-climb of Automobile Club of Auburn, Auburn, N. Y.
July 4—Track meet of Minnesota State Automobile Association, St. Paul.
July 11—Hill-climb of Plainfield Automobile Club, Plainfield, N. J.
July—Hill-climb at Richfield Springs, N. Y.; middle of month.
July 18-23—Milwaukee Sentinel trophy. Tour of Wisconsin State Automobile Association.
July 22-27—Second annual endurance run of Minnesota State Automobile Association.
December 1-8—First annual aeronautical exhibition, Chicago Coliseum.
July 28-29—Third annual interclub reliability team match between Chicago Automobile Club and Chicago Athletic Association.
July 30—Track meet of North Wildwood Automobile Club, Wildwood, N. J.
August 1—Reliability run of Minneapolis Automobile Club, Minneapolis, Minn.
August 1-September 15—French industrial vehicle trials.
August 4—Annual hill-climb of Chicago Motor Club at Algonquin, Ill.
August 15—Start of Munsey tour.
August 31—Reliability run of Minnesota State Automobile Association.

NEW ANGLE IN VELIE SUIT

Milwaukee, Wis., June 29—Invoking for the first time the extraordinary remedy of applying for a writ of prohibition to prevent the circuit court of Milwaukee county from assuming jurisdiction, attorneys for the Pierce-Arrow Motor Car Co., the Pope Mfg. Co., the Locomobile Co. of America and the Chalmers-Detroit Motor Car Co. were today granted an absolute stay of proceedings in the $500,000 conspiracy suit of the Velie Motor Vehicle Co. until September 6, by the supreme court of Wisconsin. During April the Velie company brought suit against twenty-five motor car manufacturing companies, all members of the A. L. A. M., and the Kopmeier Motor Car Co., of Milwaukee, an agent, asking for $500,000 damages on allegations of conspiracy to ruin its business and being a combination in restraint of trade.

GOUX AGAIN WINS CUP

Paris, June 8—The voiturette race for the Catalonia cup was run for the third time over Spanish roads on May 29, the winner being Goux who covered the 210 miles in a Lion-Peugeot in 4:12:26. Guippone in another Lion-Peugeot was second, and Chassagne in a Hispano-Suiza was third. Besides these three cars the field was made up of Zuccarelli and Pilliverdie in Hispanos, D'Avaray in a Crespelle, and Carreais in another make, the name of which is not given in the final report. The race as run over the Matarro circuit which is not quite 10 miles in length which has to be covered twenty-two times.

SEALED RUN AT WILMINGTON

Wilmington, Del., June 27—Coleman B. Harris, in a 30-horsepower Cadillac touring car, was the winner of the sealed time run of the Delaware Automobile Association, from Wilmington to Oxford, Pa., and return, a distance of 72.6 miles, which took place last Saturday. His time was 4 hours 14 minutes, while the sealed time was 4 hours 19 minutes. Mr. Harris had the fewest penalizations. Courtland E. Pierson, in a 30-horsepower E-M-F, was second, and John B. Bird, in a 20-horsepower White steamer, was third.

Belcher In Knox Wins Hill Honors

NEW YORK, June 25—Sportsmanlike, spectacular and satisfactory about describes the first annual hill-climbing contest of the Automobile Club of Port Jefferson, L. I., held Saturday on Port Jeff hill, a short but trying incline, leading up from the level of Long Island sound to the crest of the first ridge. The program of fifteen events filled in splendid style, and of the ninety entered cars, sixty-six actually competed. The hill is 2,000 feet long, with an elbow turn, followed by a terrific grade clear to the finish.

The aristocratic residents of Port Jefferson turned out in force to witness the stirring contests, and the cliff alongside the finish was lined with cars occupied by dozens of prominent society women of New York. They experienced a lot of sensation during the running off of the program, but not a single mishap marred the satisfaction of the day.

A Knox car, driven by Fred Belcher, carried off the premier honors by winning the cups offered for its class both in price classification and piston displacement, and by finishing third to the two Fiat special cars in the free-for-all. This car covered the course in the latter event in 27:61, while in the 301-450 cubic inches displacement event it won in :28.60. Protest was entered against the winner by J. Bell, who drove the Chalmers in all three events in which the Knox car competed. Of course the protest was not lodged against the Knox in the free-for-all, as the claim of Mr. Bell was to the effect that it did not measure up to stock car qualifications. This matter will be decided later.

In the first event three Hupmobiles started and the best time was a little over 70 seconds. The Ford won the second event from three small cars. The third race went to the Correja rather easily, and one of the Buicks outclassed its field in the fourth event, winning by about 12 seconds. This car was the only one of the Buick team to have any racing luck during the afternoon. The Matheson entry had an easy time taking the cup in its class, and the Houpt-Rockwell, which has had some difficulty in gaining entry heretofore as a stock car, landed the event for high-priced stock cars. The Fiat pair came perilously near somersaulting after the sharp turn in the free-for-all, showing by their performance the big advantage they had in the matter of engine power. De Palma swerved so far in making this turn that his machine seemed to be traveling on two wheels.

Aside from the showing of the Knox car in this race, the feature of it was the performance of the Only, a car built not far from Port Jefferson. This car is a one-lunger of high power, and of course had no chance to win anything against its field. But it chugged its way to the top of the hill without seeming to be extended, making the course in :40.29, amid the cheers and applause of the Port Jeffersonites.

The other events were won by a Pope-Hartford, Knox, owned by Mrs. J. N. Cuneo; Velie, National, another Knox, owned by W. J. Fallon, and a Stearns entered by Kingsley Swan, which captured the contest framed for members of the Long Island Automobile Club and the Crescent Automobile Club.

The most closely contested of all the events was that carded as 8A, for cars with less than 300 cubic inches piston displacement. In this five cars finished within 3 seconds of one another.

The car that was raced most during the day was the National owned and driven by C. M. Rutherford, an amateur. This car started in both the price and piston displacement classes, the free-for-all, and in the amateur event for the Ardencraig Inn cup. In the first it finished a good second to the Knox that was protested, beating two Chalmers cars and a Palmer-Singer. In its piston displacement class it was a close third to the same Knox and the protesting Chalmers entry; in the free-for-all it was seventh, only a trifle over 3 seconds behind the Knox, which was regarded as the real winner by many of the spectators. Mr. Rutherford drove to a creditable victory in the amateur cup event. In the event of Bell's protest against the Knox being sustained, Mr. Rutherford will have two firsts and a second.

The weather was perfect, the course in excellent shape, the police arrangements fine, and the sport was pronounced by many to have been the best of its kind this year. Summary:

$800 OR UNDER

Car	Driver	Time
Hupmobile	D. M. Bellman	1:10:07
Hupmobile	A. C. Dam	1:12:22
Hupmobile	E. B. Libbey	1:15:09

$801 TO $1,200

Ford	W. Blair	44:57
Oakland	H. A. Bauer	47:35
Ford	C. M. Bishop	53.76
Buick	Chas. Jones	53:80

$1,200 TO $1,600

Correja	J. Taylor	36:24
Buick	Chas. Jones	43:62
Everitt	A. C. Dam	47:75
Jackson	Richard Dyett	1:13:54

$1,601 TO $2,000

Buick	Phil Hines	31:36
Marion	H. Cassidy	43:39
Oakland	H. A. Baure	43:49
Buick	W. H. Nafis	44:45
Cutting	R. C. Vandeventer	45:20

$2,001 TO $3,000

Knox	Fred Belcher	30:46
National	C. M. Rutherford	32:91
Chalmers	Schenck Bergen	35:10
Chalmers	Joe Bell	35:56
Palmer-Singer	Chas. S. Rice	45:44

$3,001 TO $4,000

Matheson	J. A. Turner	35:93
Thomas	W. M. Jones	47:13

$4,000 AND OVER

Houpt-Rockwell	Stanley Martin	33:95
Zust	Jules Devigne	36:00
Stearns	Kingsley Swan	36:42
Knox	T. Wright	37:25

FREE FOR ALL

Fiat	Ralph de Palma	20:48
Fiat	C. S. Bragg	21:30
Knox	Fred Belcher	27:61
Columbia	J. R. Kirkpatrick	29:30
Chalmers	J. Bell	30:08
Knox	L. A. Disbrow	30:64
National	C. M. Rutherford	30:80
Zust	Jules Devigne	32:97
Stearns	Kingsley Swan	37:91
The Only Car	W. D. Sloat	40:29

161-300 CUBIC INCHES

Pope-Hartford	G. Wilson	32:32
Pope-Hartford	Jos. Taylor	32:44
Correja	E. Jenkins	33:04
S. P. O.	F. J. Horton	33:98
S. P. O.	John Jonhasg	35:33
Buick	Charles Jones	37:91
Lancia	A. Ferguson	40:85
Knox	F. E. Ruland	56:56
Corbin	H. B. Tucker	1:14:27

301-450 CUBIC INCHES.

Knox	Fred Belcher	28:60
Chalmers	J. Bell	30:81
National	C. M. Rutherford	31:35
Berkshire	F. Wilson	32:56
Zust	V. P. Pisani	32:66
Stearns	Kingsley Swan	33:76
Chalmers	Schenck Bergen	33:84
Velie	R. C. Vandeventer	38:92

451-600 CUBIC INCHES

Knox	L. A. Disbrow	31:09
Zust	Jules Devigne	32:14

PORT JEFFERSON HILL-CLIMB ENLIVENED BY A BAND

AMATEURS, CLASS B, $1,201 TO $2,000

Velie	R. C. Vandeventer	39:55
Jackson	Richard Dyett	1:05:24

AMATEURS, CLASS C, $2,000 AND OVER

National	C. M. Rutherford	31:84
National	W. Smith	36:35
Chalmers	C. Foster	37:22
Lancia	A. Ferguson	39:62
Knox	E. B. Hawkins	1:36:58

AMATEURS, PORT JEFFERSON CARS

Knox	W. J. Fallon	56:69
Jackson	Richard Dyett	1:02:72

AMATEURS, L. I. A. C. AND CRESCENT A. C.

Stearns	Kingsley Swan	36:93
Buick	H. A. Trimm	52:21

WOULD STANDARDIZE ROADS

Rochester, N. Y., June 29—Special telegram—With over sixty cars in the line carrying over 300 people, and with the streets of the city black with curiosity seekers, the third semi-annual conference of the state highway commission, division engineers, section superintendents, district superintendents and the county superintendents of highways of the state of New York began its 2 days' inspection and study trip over western New York state this morning promptly at 8 o'clock.

Heading the procession was Secretary Bert Van Tuyl of the local club. The object of this conference directly is the study and inspection of every sort of road to be found in New York state by each and severally the representatives of New York state from its every corner. Indirectly, the results to be obtained are the thorough acquaintance of the needs and requirements of the different sections of the state both as to materials used and other details which go to make up road-building; in other words, standardization of the road work in the state as it affects both highways and bridges, standardization of roads as to width, uses of local material, waterproofing surfaces, drainage, crowning and the construction of safety ditches; standardization of bridges as to the use of steel and concrete in place of wood and lesser staple materials.

This vast outpouring of road enthusiasts drawn as it is from the farmers, and from the motorists of the city, and commingled in one cause by the good offices of the state highway commission, is having but one effect upon the road conditions of the future, that is to mark a new era in the history of road-building.

The 2-day trip will cover 220 miles of carefully selected roads in thirty-three towns in six counties and will include every sort of road and pavement, from those earth roads costing $50 a mile to the state road costing $20,000 a mile. Each man is supplied with a map showing the exact route to be followed upon which map are numbered spaces which correspond with numbered descriptions in an accompanying guide book. The spot in the road corresponding with the numbers in the book and on the map also is numbered. An advance car sent out by the state highway commission has blazed the trail and put up these numbers at every point. The trip is in no way a junket. It is an educational affair purely with the prime intent and purpose the thorough understanding of what is needed for the best roads in New York state.

Amateurs Contest at Empire City

START OF PORT JEFF HILL, WHERE KNOX AND FIAT STARRED

NEW YORK, June 27—Under particularly favorable weather conditions the annual race meeting of the Mount Vernon Automobile Club was held Saturday at the Empire City race track. There was an attendance of about 1,200 and the program of five interesting events passed off smoothly. The feature of the day's racing was in the contest for the Westchester Gentlemen's cup, second on the program. Four elimination trials at 5 miles each preceded the final heat, which was over the 10-mile distance. The cars were divided into class under the piston displacement divisions and the winners in the elimination trials were eligible for the final. In class C of this event two Buicks were entered and the winner turned up in the car of Russell Smith. Joseph A. Henning protested that Mr. Smith's car was a racing machine and the referee decided to avoid all question by allowing Mr. Henning's car to take part.

The last race on the program furnished a bit of sensational driving on the part of the winner, Russell Smith's Buick. The race was for the championship of the Mount Vernon Automobile Club and Smith got away flying and was leading at the commencement of the fifth mile, when he suffered a blowout. By a nervy exhibition of strength and coolheadedness Mr. Smith held the car in the course and finished first. Summary:

FIVE MILES, MENDEL CUP, FOR CARS WITH LESS THAN 300 CUBIC INCHES

Car	Driver	Time
Fiat	Byron Chandler	7:35.20
Black Crow	Otto F. Rost	7:44
E-M-F	L. F. Kissling	
Stevens	Walter L. Abate	

FIVE MILES, WESTCHESTER GENTLEMENS' HANDICAP: CLASS A, LESS THAN 230 CUBIC INCHES

Buick	Walter Weisbecker	8:32.80
Reo	R. M. Owen	
Hudson	W. W. Swann	

CLASS B, 231 TO 300 CUBIC INCHES

S. P. O.	M. P. Batts	7:33.60
Fiat	B. Chandler	

CLASS C, 301 TO 450 CUBIC INCHES

Buick	Russell Smith	6:57.20
Buick	J. A. Henning	

CLASS D, OVER 450 CUBIC INCHES

Mercedes	S. Wishard	6:20.40
Mercedes	W. H. Mendel	
Mercedes	M. A. Isaacs	

FINAL: TEN MILES HANDICAP

Mercedes, scratch	S. Wishard	12:25
S. P. O., 840 feet	M. P. Batts	13:18.50
Buick, 420 feet	Russell Smith	
Buick, 420 feet	J. A. Henning	
Buick, 1560 feet	Walter Weisbecker	

WESTCHESTER CUP, OPEN TO AUTHORIZED CLUB MEMBERS, 10 MILES

Buick	Russell Smith	13:22
Midland	J. M. Boyle	13:31
Mercedes	W. H. Mendel	
Buick	Jos. A. Henning	
Isotta	W. H. Mendel	

OBSTACLE RACE, CLASS A, 110 INCHES OR LESS WHEELBASE

S. P. O.	M. P. Batts	19:20
Hudson	W. W. Swann	19:80
Cadillac	F. J. Gilbina	

CLASS B, OVER 110 INCHES WHEELBASE

Fiat	B. Chandler	21
Isotta	W. H. Mendel	21:20
Premier	C. P. Phillips	

FIVE MILES, CLUB CHAMPIONSHIP

Buick	Russell Smith	6:50
Mercedes	Moe A. Isaacs	6:52.50
Mercedes	W. H. Mendel	
Buick	Jos. A. Henning	
Isotta	W. H. Mendel	
Fiat	Byron Chandler	

DENVER POST RUN NOW ON

Cheyenne, Wyo., June 28—Special telegram—Seven perfect scores were made in this the first of the 5 days' reliability contest promoted by the Denver Post, which started this morning from Denver. The Renault, Studebaker, E-M-F, Jackson, Buick, Rambler and Haynes were in this category, while those penalized included: Reo, 3; Flanders, 103; Hupmobile, 19; Regal, 10; Brush, 8; Gleason, 111; No. 15 Paige, 18; No. 16 Paige, 13; Firestone-Columbus, 49; Apperson, 10. The Gleason was assessed 100 points for careless driving. Tonight it was raining hard and it is anticipated that the run tomorrow back to Denver, a distance of 115 miles, will be a tough one. Thursday the run goes from Denver to La Junta, 181 miles, and Friday from La Junta to Hugo, 200 miles. Saturday the cars return from Hugo to Denver, 208 miles.

Gossip of the Trade From Detroit

DETROIT, Mich., June 27—So rapidly have things moved along in the motor business that a week like the past, which brought forth but three or four new companies, seems like a dull one. As a matter of fact it was a dull week, many factory heads being away attending to sales belated by the inclement weather of April, May and early June, while the excessive heat kept at a low point the energy of those at home.

Of the new companies but one was a car manufacturing proposition, and that too is but in the formative stage. The Evans Motor Car Co. is being formed by R. H. Evans, ex-president of the Zenith City Telephone Co., of Duluth and Superior, to build a commercial wagon of perhaps 1,000 pounds capacity. Mr. Evans has secured the Marine City Iron Works plant at Marine City, Mich., for his plant, but will have his main offices in this city.

In the Bauer Steel Body Co., organized here last week, the accessory field gains a prominent member. This concern will build not only steel bodies for commercial and pleasure cars, but also radiators and other steel parts. The capital stock is $20,000, all paid in. The stockholders and officials are: Charles W. Roseberg, president; M. C. Bauer, vice-president and superintendent; Milton C. Hirschfield, secretary and treasurer. The factory will be located at Warren avenue and Fifteenth street and will open for active operations on July 1.

To care for an increased amount of business in ignition supplies, the Champion Ignition Co., of Flint, has increased its capital stock from $60,000 to $100,000.

Building continues with unabated vigor, this being a sign of the permanence and stability of the industry here. The big Lozier plant on Mack avenue near the belt line is rising rapidly now under the energetic work of the contractors and J. G. Perrin, superintendent for the Lozier company. Temporary offices of the company have been established in the Ford building, but it is expected that the work will be so far along that the offices at the plant will be ready for occupancy during the fall—that is, in September.

Work is also rushing on the E-M-F addition on Brush street and on Piquette. The latter will carry out the present building in an unbroken line to John R. street. A purchase of the house and lot just across this street by a party supposed to be acting for the Cadillac Motor Car Co. gave rise to the rumor that the latter company was seeking to block the further expansions of the E-M-F company towards Woodward avenue. The same rumor connected both of the company mentioned with the purchase of the very large vacant tract of land on the corner of Piquette and Woodward avenue, a deal for which is said to be pending. The E-M-F company also is building large additions to its plants Nos. 3 and 4, on Jefferson avenue.

The factory of the Sibley Motor Car Co. out at the west end has been finished and the company is now moving in. This is a large one-story structure located at Solvay and Mackie avenues. The company is placing on the market a four-cylinder runabout known as the Sibley 20.

Sixty-eight thousand dollars is the valuation placed on the new factory of the Regal Motor Car Co. in the building permit. Although this has just issued, the building is well along, the first story being practically completed. The building is located on the north side of Harper street between St. Antoine and Hastings streets, the other half of this block now being occupied by the test house and testing track.

Grand has just been broken on Chene street for the new machine shop of Dodge Brothers, manufacturers of parts, transmissions, clutches and similar units. When completed this will be one of the largest buildings in the country devoted to this class of work, and will include a large drop forge and foundry.

This unprecedented amount of building and the consequent expansion of the various factories has kept the help problem more to the fore than ever before. Good workmen are becoming more scarce than ever before, despite what other trades characterize as ruinous wages. Some idea of the present scarcity of men in Detroit motor car factories may be gained from a brief mention of the advertised wants, those not advertised probably being of equal if not greater quantity. The Grabowsky company wants lathe hands and other machinists; the Kelsey-Herbert company would like to secure a lot of shaper hands; the Fisher Body Co. wants diemakers; the J. C. Wilson Body Co., sanders and coaters; the Anderson Carriage Co., colorers on body work; the Buffalo Carbureter Co., furnace tenders; the Krit Motor Co., engine and chassis assemblers; the Willys-Overland Co., draftsmen; the McCord Mfg. Co., tinsmiths; the Detroit Lubricator Co., monitor hands; the E-M-F company, machinists, millwrights, grinders on crankshafts and camshafts, lathe hands, body fitters and gear painters; the Clark Motor Co., draftsmen; the Packard Motor Car Co., carriage painters, rubbers, glazers, top builders, etc. Carpenters are wanted at the Lozier, Ford, Hudson and Dodge Brothers plants; the Pierce Cycle Co. wants motor assemblers; while the following are wanted by unknown concerns: Foremen body builders, foremen machine shops, mechanics on engine work, mechanics in garages, wood and metal patternmakers in many shops, toolmakers, shipping clerks, brass buffers, die-sinkers, chauffeurs, coremakers, woodworkers on truck bodies, etc.

The Flanders Under Three Flags car is traveling along towards the City of Mexico at a lively rate, having arrived in the state of Oklahoma now. In western Missouri the car and its operators had many mishaps, among which may be mentioned jumping off of a 3-foot bank into the north branch of the Pommeterre river, losing the road many times through false directions, etc. On Friday last the car passed through parts of three states—Missouri, Kansas and Oklahoma. In this section of the country many miles of fine road were found which had been constructed from shale refuse of the coal mines. Over these fast time was made, but most of the way was over virgin prairie and through pastures. On reaching Eufaula, Okla., the remarkable statement was made that not one of the tires has been pumped up during the trip thus far, all four still holding the Detroit air

FLANDERS UNDER THREE FLAGS CAR AND THE CUSTER MONUMENT

with which they started out from Detroit nearly a month ago.

The problem of getting men is not the manufacturers' only worry, for now the men, not satisfied with a surplus of work and high pay, are about to organize labor unions, which means a demand for still more money. The workmen of this city engaged in the motor business have talked of organizing for a long time, but now officers of the American Federation of Labor have come to the city for the avowed purpose of attending to this matter. Just how far they will go and just where the matter will end is a subject for conjecture, but a decidedly serious one.

Another new company entered the local field yesterday, when the Walker Motor Co. incorporated with $150,000 capital. The principal stockholders are: G. S. Grantlung, John E. Armstrong and Thomas E. Morehead. The Sibley Motor Car Co. has increased its capital stock from $80,000 to $150,000.

The latest addition to the industry here to come in from outside is the Bower Roller Bearing Co. of Dayton, O., which is to give up its Ohio home. For this purpose the company has reincorporated under Michigan laws with a capital of $250,000.

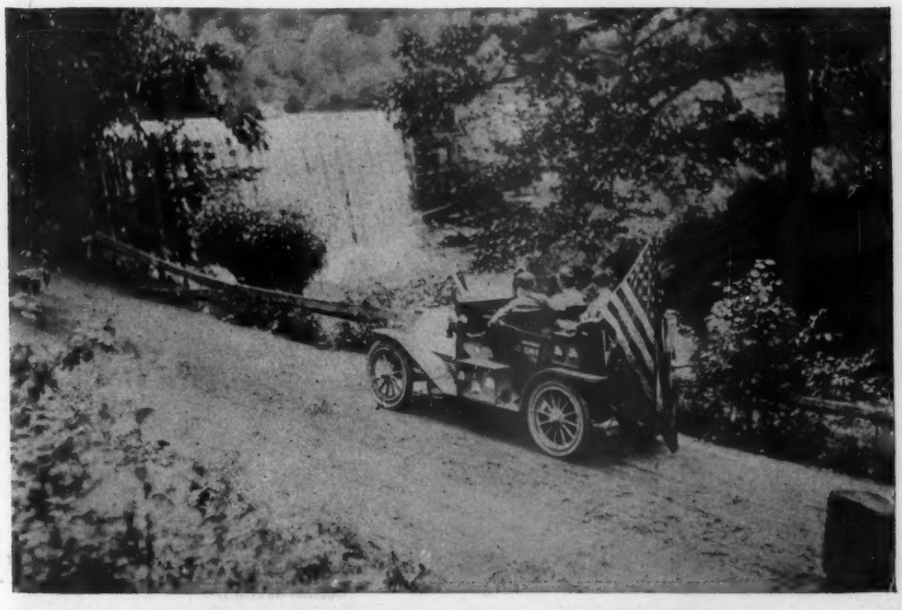
A move in the opposite direction has just been taken by the E-M-F Co., which has purchased a tract of land, comprising a total of 5 acres in Pontiac, fronting on Grove, Baldwin and Howard streets, and lying along the Pontiac, Oxford and Northern railroad, adjoining the property of the Monroe Manufacturing Company, in which the E-M-F Co. owns a controlling interest. On this land a large body-building plant to employ 1,000 men will be erected, work starting this month. The present wood buildings of the Monroe company will be torn down and replaced by brick structures, which will be strictly fireproof. When the new buildings are completed the top department, now housed in the old phaeton building on Willow street, will be removed to the new plant.

Scenic Beauties of Munsey Route

BRETTON WOODS, N. H., June 25—It is futile to attempt to describe the beauties of the trip from Boston to this point, which is the route over which the Munsey historic tour will pass on the third and fourth days of the tour. Not only is the scenery the most diversified imaginable, ranging from the ocean beaches of Massachusetts, New Hampshire and Maine to the wonderful Green and White mountains of Maine and New Hampshire, but from a road standpoint the tourists will find them embracing good, fair and bad. However, the roads for the most part are good, and it is an agreeable fact that they are constantly being improved. The tourists also will find the roads well sign-marked.

From an historic point of view the route so far laid out by the pathfinders is replete with incidents and reminders of the early days of the republic. Bunker Hill, the Old South church, and the place where the Boston massacre occurred are a few of the historic points of interest in the Hub. Then comes Salem, where the witches were tortured in the early days of America. The old house where the judge held court still stands. Gloucester, the famous fishing port, is next reached, and then comes the venerable town of Portsmouth, N. H. It is full of interesting old buildings that date back far beyond the revolutionary war period. Passing into Maine, one soon reaches Kittery, believed to be the site of the first settlement in the state. Then comes the Maine coast, the rugged and peculiar rock formations and smooth hard beaches forming a picture that is most enhancing.

Leaving the ocean, the pathfinders soon found themselves in the beautiful White mountain region. The Presidential range in all its grandeur can be seen as the car bowls along. The ride through Crawford Notch, between Mount Webster and Mount Wiley, is a particularly interesting one to the motorists on the trip, who are having a good time.



MUNSEY TOUR PATHFINDER E-M-F IN NEW HAMPSHIRE

QUAKERS ENJOY A RUN

Philadelphia, Pa., June 26—About thirty-two cars, three driven by women, representing twenty-seven different makes, participated in the first annual sociability of the Automobile Club of Philadelphia, which left here yesterday for Lake Hopatcong, N. J., one of the most popular of north Jersey resorts, and returned this evening. The weather conditions throughout were perfect, although the roads were far from being in as good condition as the official pathfinders reported. The times for the various controls were secret, unknown to all but President Powell Evans, who put the figures down. Seven trophies will be presented to the winners, three being offered by the club. In addition, Somerville, Lake Hopatcong, Easton and Norristown offered trophies for the best time made to those points. On the northern trip tire trouble was the only cause of delay, but on the homeward trip there were many accidents and near-accidents, the most serious being that of H. P. Hitchcock, driving a Stevens-Duryea, who ran his car into a ditch, it being some time in several clubs.

DEATH OF CHARLES E. TEST

Indianapolis, Ind., June 27—After an illness of several months from Bright's disease and liver trouble, Charles E. Test, president of the National Motor Vehicle Company, of this city, died at Waukesha, Wis., on June 22. He had been at a sanitarium at Waukesha for about 8 weeks and it was believed he was improving until a few days before his death. Mr. Test had been prominent in manufacturing circles of this city for 30 years. He came here from Richmond to become purchasing agent for the Nordyke & Marmon Co. Later he became a partner in the Diamond Chain Mfg. Co., disposing of his interests in 1896. In 1900 he organized the National Motor Vehicle Co., first engaging in the manufacture of electric cars, later in the manufacture of gasoline vehicles. The body was brought to this city for burial.

CINCH FOR DE PALMA

Philadelphia, Pa., June 24—The 50-mile motor race scheduled for last Saturday, and which a downpour of rain ended at the conclusion of 30 miles, was run over again yesterday at Point Breeze track. Out of the seven original entries but two contestants started—de Palma, driving a Fiat, and Beardsley, driving a Buick. The contest proved to be a walkover for the Fiat, engine trouble being the cause of the Buick's downfall.

F. Porsche, Austrian Daimler, Winner of Prince Henry Trophy

Austria Gets Prince Henry Trophy

BERLIN, June 9—Austria gets the famous Prince Henry trophy for keeps, the luck of the draw, which was held today to decide the final ownership of the big shield, favoring Ferdinand Porsche, chief engineer of the Austrian Daimler plant, who drove an Austrian Daimler to victory in this year's tour which was run this month. According to the deed of gift, the Prince Henry trophy had to be won twice by one concern to decide its ownership or, failing in this the three winners in the 3 years of running were to participate in the drawing which was to settle the problem. This drawing took place today and was participated in by Porsche, the 1910 winner, William Opel who won with an Opel in 1909, and Fritz Erle who drove the Benz to victory in 1908. Porsche drew the lucky number.

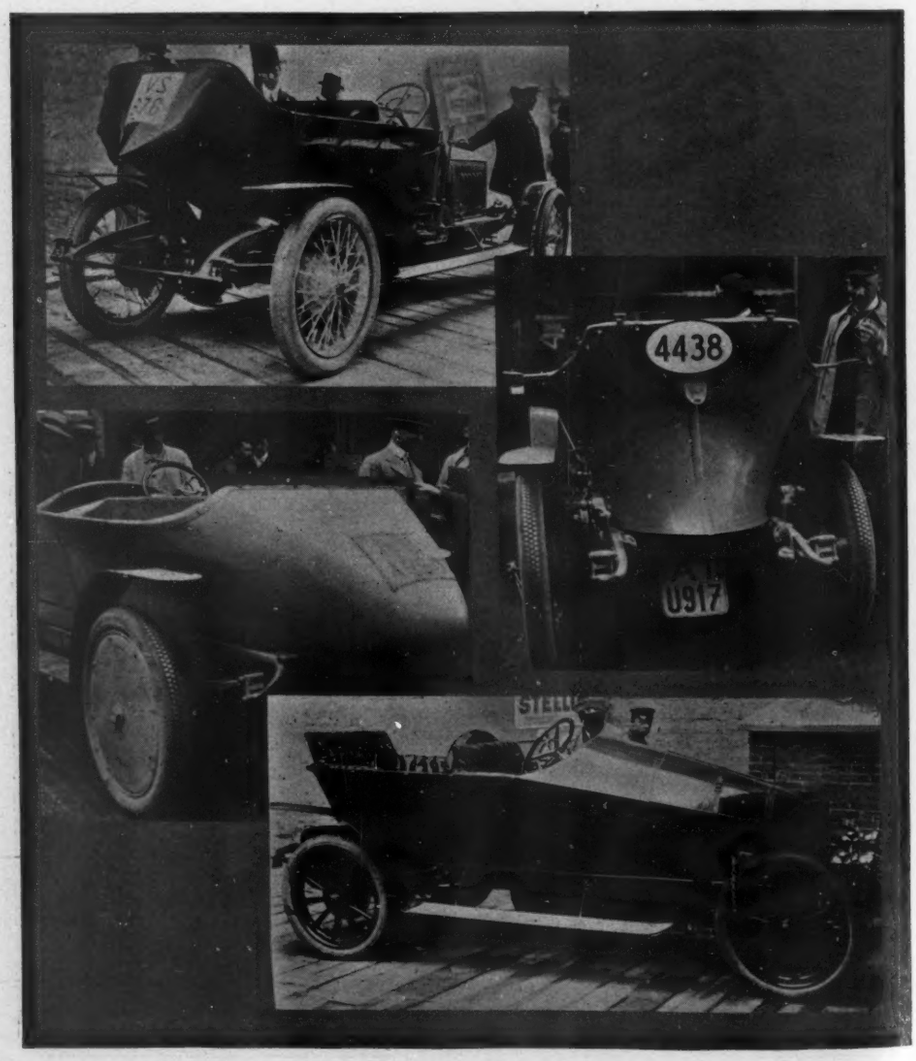
The results of this year's Prince Henry tour were cabled to Motor Age upon the completion of the contest, giving the standing of the first five cars. At the banquet tonight the report of the officials went more into detail, although the complete results have not as yet been compiled. As announced tonight the individual winner of the tour is Porsche, while second place has been awarded to Edward Fischer, a director of the Austrian Daimler Co., while Count Henrich Schonfeld was given third, thus ranking the Austrian Daimler one, two, three. Herbert Ephraim, driving an Opel and who made the fastest time in the speed trials was ranked fourth, while fifth place went to Fritz Erle, winner of the 1908 contest, who again drove a Benz. Those in the first twenty are five Austrian Daimlers, one Opel, seven Benz, four Mercedes, and a Presto, Alder and Gaggeaneu.

Porsche won the second speed trial and was second to Fischer in the first one. This gave Porsche 20.90 plus percentage while Fischer had 20.51. Just how many cars really finished the tour is a mooted question, but is estimated that fully 25 per cent of the 121 contestants dropped out before the end of the tour.

Prince Henry made glad the hearts of the motorists tonight, when he announced that he had already offered a new trophy to the Kaiserlicher Automobile Club, and that negotiations were under way for a tour through England, one through Austria and another through Russia, the rulers of these countries being favorable to the idea.

The tour, which started from Berlin on June 2, finished at Hamburg on June 9. Of the 127 cars entered 121 started, the pacemaker being none other than Prince Henry himself. There was one woman contestant in the tour, Lilli Sternberg, who drove a four-cylinder Opel, and who has been a participant in all of the Prince Henry and Herkomer tours. The first day's run was to Braunschweig 154 1/0 miles, and included in the day's itinerary was the first of the two speed trials which was at a distance of 3.4 miles, each car being given 500 meters flying start. This test took place at Genthin and an official report of the result was as follows:

Contestant	Car	Bore	Stroke	Time	Score
Erle, Benz		4.1	6.5	2:30 4-10	7.03
Fischer, Aus. Daimler		4.1	6.5	2:32	6.85
Ephraim, Opel		4.5	6.9	2:26	6.65
Paul, Adler		4.1	5.9	2:38	6.45
Gerber, Gaggenau		4.3	6.5	2:36	6.06
Opel, Opel		4.5	6.9	2:53 2-10	6.30
Spitzner, Benz		4.5	6.9	2:28 2-10	6.20
Lengerke, Bergman		4.1	6.5	2:39 2-10	6.09
Kidner, Vauxhall		3.5	4.7	3:30	4.40
Drebissl, Fiat		3.7	6.1	3:12	4.10
Treuberz, Dixi		2.95	4.7	3:45	3.91



Four Body Styles, Opel, Austrian Daimler, Benz and Mercedes

As will be noted by a reference to the table it will be seen that the fastest time was made by Ephraim in an Opel touring car who did the distance in 2:26, or at the rate of 83.8 miles per hour. However, under the formula, Ephraim was rated third, first place being given to Erle in the Benz. Outside of the speed trials there was nothing remarkable about the day's run, 114 of the cars making the night control within the time limit.

The second day's run was from Braunschweig to Cassel, a distance of 200 miles, which was a tiresome run because of the dust. The scenery, however, was beautiful. Many experienced tire troubles, while ignition troubles also bothered not a few. The third day out the tourists drove from Cassel to Nuremberg a distance of 207.7 miles. One of the Gaggeneaus had valve troubles and was withdrawn. An Opel broke a differential, and a Stoewer broke a crankshaft pin. On this day also tire troubles were frequent.

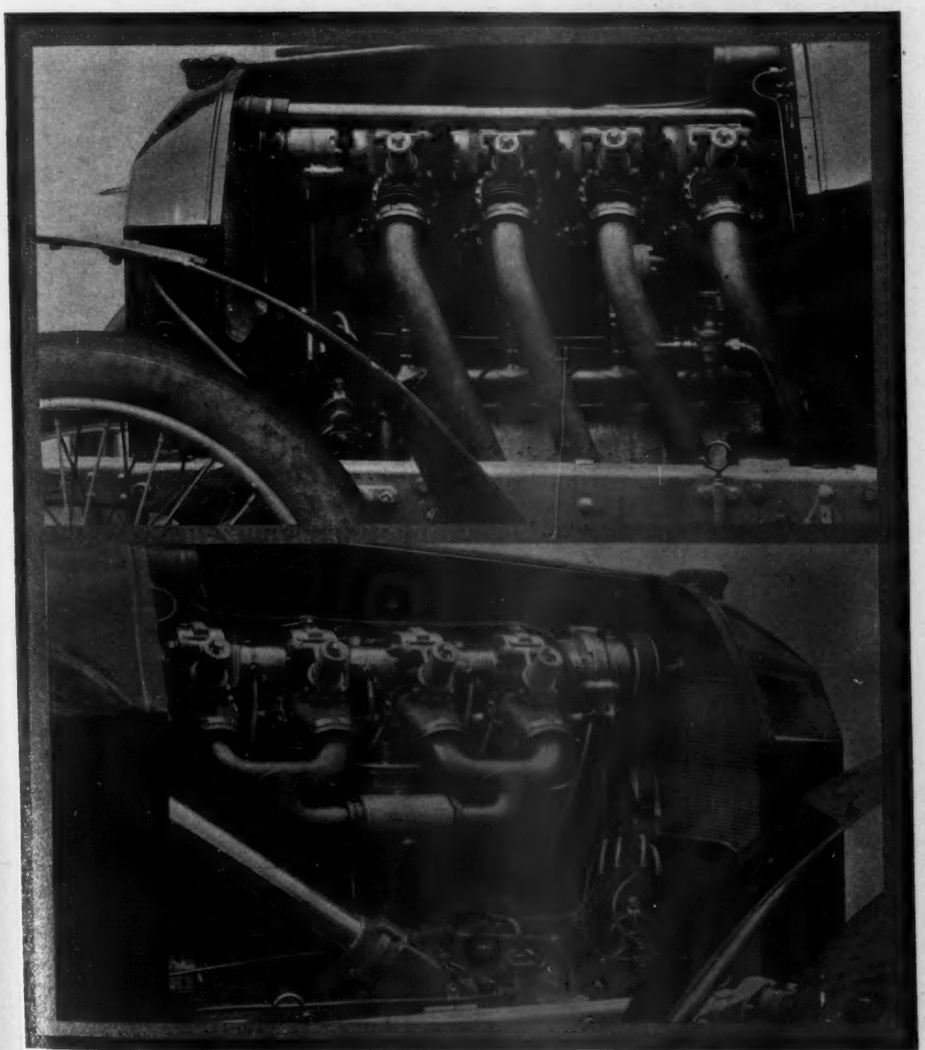
Sunday was spent in Nuremberg and the 400 participants in the tour enjoyed a day of rest. The officials, however, had no such leisure and spent the day listening to complaints. As a result of the deliberation E. Leuschner, driver of a Protos, was disqualified because of an accident in which a girl was injured. Although it was proven that the driver was not responsible for the accident, the rules made disqualification compulsory. At this stage there still were 108 cars in the tour. No. 35 Benz had been withdrawn on account of losing a motor bearing; Nos. 39 and 42, both Bergmann-Metallurgiques, had been withdrawn because of having been burned; No. 87 Mercedes was out because of motor bearing troubles; No. 92 Fiat on account of valve troubles; No. 98 Brennabor on account of a broken crankshaft pin; No. 22 Gaggeneau on account of a broken piston; No. 68 Opel on account of a broken differential; No. 111 Mathis on account of valve troubles; No. 113 Mathis on account of a motor bearing; No. 115 Stoewer on account of motor bearing troubles; while No. 72 Protos was disqualified by the officials of the tour.

ONE OF THE BENZ CARS IN PRINCE HENRY TOUR

Resume of the Big German Tour

The run from Nuremberg to Strasburg the fourth day's running, was the longest of the tour, the distance 221. 4 miles, the roads being dusty and the sun exceedingly hot. The day's run was marred by an accident to Buchroh's Opel which hit a stone, breaking a wheel and smashing the radiator. Reichstein's Brennabor caught fire and was wrecked, while others who experienced trouble were a Fiat with a crankshaft, an Austrian Daimler with a broken spring, and two Stoewers with motor troubles.

The second speed trial was held during the run between Strasburg and Metz. The distance of the trial was 3.4 miles, the same as the first one, the course being near Heiligkruz. The trials were marred by a double fatality when a tire on the Adler driven by Franz Heine blew up, causing the car to run into a tree, killing the observer and mechanic. This delayed the trial an hour. While no official results have been given out as yet regarding the results of this trial, it is unofficially stated that the best time of the day was made by Von Jagerneyer in an Austrian Daimler who did 2:22.4 which however did not make him the winner under the formula. Porsche in the Aus-



TWO VIEWS OF THE AUSTRIAN DAIMLER MOTOR USED BY WINNER

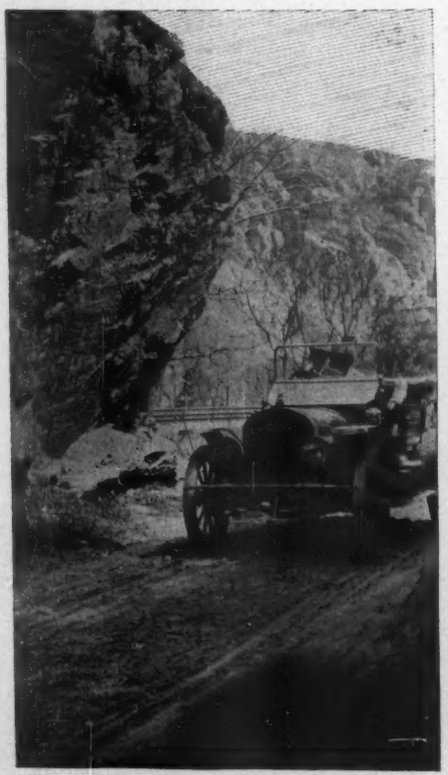
trian Daimler was the winner with 14.11 plus percentage, his time being 2:30.2. Arthur Henney in a Benz was ranked sec-

The distance of this day's run was 208 1-10 miles, and during the afternoon the tourists encountered three thunderstorms. Twice lightning struck big trees, fellng them so that the drivers were compelled to stop and use up valuable time getting the trees out of the road. A Berliet broke a rear wheel and was put out of the running, while a broken rear axle disposed of another Gaggeneau. A Bergmann-Metallurgique had ignition troubles and was withdrawn, a Protos collided with another car, while a Raf and a Presto met with mishaps which sidetracked them.

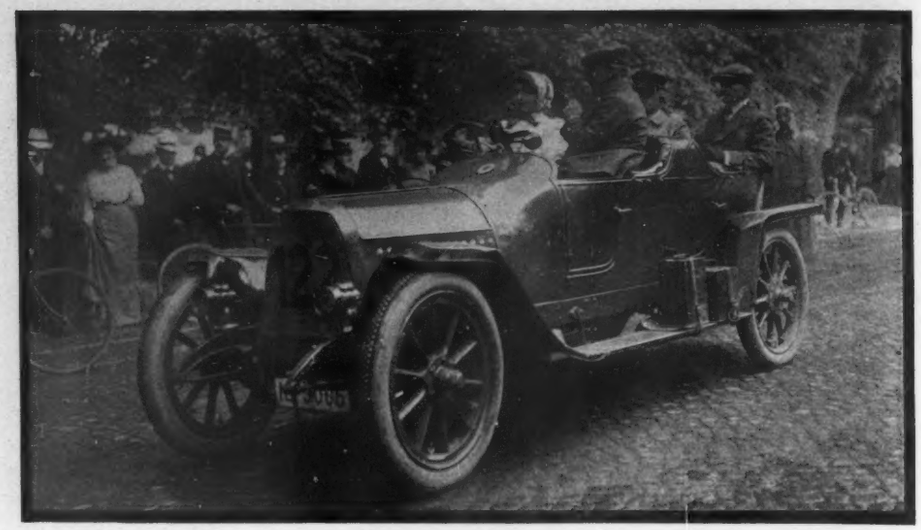
The last day of the tour was from Metz to Homburg, which is a health resort in the famous Taunus mountain region, where the Gordon Bennett cup race was run a few years ago. The distance of this day's run was 217.5 miles, and among the cars put out were a Dixi, a Deutz, a Breannor, and a Stoewer. This brought the tour to an end.

REGAL PLUGGER FINISHES

Detroit, Mich., June 27—Saturday saw the return home of the Regal Plugger after traveling some 22,000 miles. The car was not only welcomed by a truck containing a brass band, but also nearly 100 Regals and many other cars sent out decorated by the accessory people having something on the country-coverer. It was the intention of the Regal company to have this car at the exposition, but now it seems that there is not enough space for that, so the car, all bedecked with labels from all over the United States, has been placed on exhibition in the local sales agency on Woodward avenue.



RAMBLER IN WISCONSIN DELLS



FRAU LILLI STERNBERG IN OPEL IN THE GERMAN TOUR

Missourians Try For Star Trophy

ST. LOUIS, Mo., June 28—The 3-day reliability run for the St. Louis Star trophy under the auspices of the St. Louis Automobile Manufacturers' and Dealers' Association started Tuesday morning with twenty-eight contestants in the lists. The Buick pilot car driven by Frank Delaney left St. Louis Star square at 5 a. m., and an hour later the first of the contestants were sent away, the others following at intervals of 1 minute in their order. The first day's run took the contestants from St. Louis through St. Charles, Wentzville, Harvester, Cottlesville, Darden, Flint, Moscow Mills, Troy, Eolia, Clarksville, Louisiana, New London and Hannibal, a distance of 141.1 miles. The second day's run is from Hannibal through Palmyra, Monroe Hunnewell, Shelbina, Clarence, Macon, Excello, Jacksonville, Moberly and to Mexico, distance 143.3 miles. The third day's run will end at St. Louis, the tour passing through Wellsville, Montgomery, Jonesburg, Warrenton, Truesdale, Middleton, Wright City, Forestel, Wentzville, Darden, Cottlesville, Harvester and St. Charles.

At the conclusion of the tour Thursday evening the cars finishing will be driven to the official garage where the final inspections will be made. The Star trophy, a handsome cup, will be awarded to the car which shall have finished with the most nearly perfect score. Should two or more cars tie for the highest score the contest committee will arrange a special run for final decision, for it has been decided that there shall be no tie—that the cup shall go to an individual.

The contestants include a representative line of the best cars in the country, and some of the drivers have made notable races. The cars which started and their drivers were as follows: Buick, Frank Delaney, pilot car; Overland, Charles E. Goldthwaite; Moon, Eli Coillutte; Maxwell, Val Heinrich; Oldsmobile, B. W. Olin; Mitchell, C. M. Barnard; Oldsmobile, W. B. Fewell; Cadillac, W. F. Bagnell; Moon, E. J. Moon; Rambler, Will Smythe;

START OF THE BABY GLIDDEN TOUR FROM DES MOINES

PRINCE HENRY ACTS AS PACEMAKER IN GERMAN TOUR

Baby Glidden Run Held By Iowans

Dorris, J. T. Rumble; Moon, Mathew Blavalt; Columbia, E. E. Ernest; Buick, James Ladd; Everitt, Arthur J. Whittaker; Mitchell, J. H. Little; Ford, H. L. Bagley; Pope-Hartford, Walter Saigeon; Haynes, Carl Williams; National, C. Merz; Inter-State, H. M. Paine; Buick, N. C. Tuxbury; Sterns, J. M. Dunwoodie; Hupmobile, Roy Anselm; Dorris, J. E. Baker; Marmon, Ed Holthaus; Amplex, H. L. Schure; Moline, W. von Steiger; Stearns, D. B. Brownback. This is regarded as a field thoroughly representative of the industry.

St. Louis, Mo., June 29—Twenty-eight cars still were in the run when the tour left Hannibal this morning, sixteen with perfect scores. Penalties for first day were as follows: No. 2, Moon, 971; No. 4, Maxwell, 998; No. 5, Olds, disqualified; No. 6, Mitchell, 990; No. 9, Moon, 975; No. 10, Rambler, disqualified; No. 12, Moon, 998; No. 15, Everett, 994; No. 16, Mitchell, 993; No. 18, Pope-Hartford, 999; No. 24, Hupmobile, 975; No. 26, Marmon, 977; No. 29, Stearns, 994; No. 30, Haynes, 886; all others, 1,000.

DES MOINES, IA., June 25—Forty-three cars took part in the Baby Glidden as the northern Iowa endurance contest, which was run from June 20 to 24, was called. The affair was the greatest event of its sort ever held in this section. Only two cars finished with perfect scores, a Locomobile owned by C. R. Prouty and a Ford roadster driven by J. S. Southwick. The field was divided into four classes, the Locomobile and a Premier winning the prizes in class A, a Cadillac and an Inter-State in class B, a Mitchell and a Cole in class C, and two Fords in class D. Seven of the cars had perfect road scores, but five of them were penalized in the brake and clutch tests. In class A the Premier entered by the Hearne Motor Car Co., and driven by W. H. Fowler was penalized 2 points on the road, but was perfect in the final test. In class B both the Cadillac and the Auburn and the Inter-State were clean on the road, but fell by the wayside when the technical examination of the cars was made. In class D the Ford roadster had a perfect score throughout, but the Ford touring car was penalized 2 points on the road. This contest was promoted by the Iowa Automobile Club of Des Moines and was in charge of W. E. Meyer, chairman of the tours and events committee. The run proper was 440 miles in Iowa with Des Moines as the starting point and Spirit Lake the half-way house.

Iowa is the first agricultural state in the union and until this year roads in this commonwealth received little attention. During the winter a good roads movement was inaugurated at a big convention held in the Coliseum of this city, when practical plans were outlined for the improvement of Iowa roads. The winter hardly had passed before hundreds of King road drags were at work rounding up the roads.

Anticipating the arrival of the Glidden tourists in this section, the farmers accomplished a wonderful feat today when they thoroughly dragged the river-to-river road between the hours of 9 and 11 a. m. The following is the summary of the Baby Glidden:

No.	Make.	Class.	Score.
1	Locomobile	A	Perfect
2	Reo	C	12
3	Auburn	B	23
4	Premier	A	2
5	Cadillac	B	5
6	Interstate	B	5
7	Mitchell	C	1
8	Halladay	C	11
9	Black Crow	C	23
11	Ford	D	Perfect
13	Ford	D	2
14	Buick	D	24
15	Petrel	C	13
16	Ohio	B	51
17	Overland	C	11
18	Buick	D	4
19	Apperson	B	9
20	Cole	C	2
21	Wells	A	16
22	Cartercar	C	21
23	Moon	C	38

FINISH OF THE FIRST CAR IN THE BABY GLIDDEN

STIFF GRADE AT SPRING VALLEY, ILL.

The Readers'

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

RIGHTS ON THE ROAD

REXBURG, Idaho—Editor Motor Age—In our section of the country a great many of the farmers seem to think motor cars have no road rights. If anyone approaches from the rear it is next to impossible, in a great many cases, to get any road courtesies, and after taking the rough road in order to pass, cursing follows if the horses become frightened in so doing. If they would give a part of the smooth road, and thereby avoid the necessity of taking the low-gear, this would be avoided. Is there a court decision on this question? If so I would very much like to get it and have it published in our local papers.—O. Waldram.

There is no general motor vehicle law in the state of Idaho, but the rule that one who attempts to pass another on the highway going in the same direction has the right to do so in such manner as may be most convenient under the circumstances, and where damage results to the person passed the former must answer for it, unless the latter by his own carelessness brought the disaster on himself, is applicable to one attempting to pass a standing vehicle when he approaches from the rear. A little diplomacy and good nature under the above mentioned conditions is the motorists greatest aid, and if every motorist in your territory could be advised to show the drivers of horse vehicles a little more courtesy and would heed the advice it will not be long before these courtesies would bear fruit and you would find that these drivers will turn out or give a fair share of the road with more alacrity.

OFFSET CRANKSHAFT

Dunolly, Victoria, Australia — Editor Motor Age—Will Motor Age, through the Readers' Clearing House, answer the following questions:

1—What is meant by offset cylinders and its advantages?

2—In some friction-driven cars, the friction disk and friction wheel engage with each other—1-inch high gear—by mitered surfaces at their edges, thus eliminating torsional strain and wear. Is this thoroughly efficient, that is, is there no lateral play, where any play would be so bad? I should have thought it difficult to keep the edges in exact opposition.

3—What does Motor Age know of the efficiency of the Metz plan car, especially the engine cooling?—Discus.

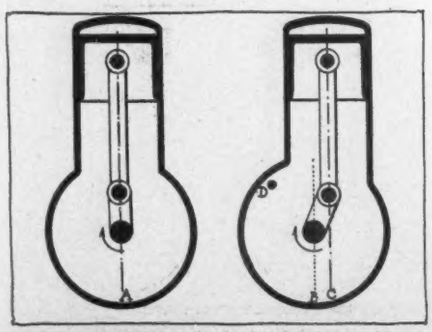


FIG. 1—CENTRAL AND OFFSET CRANKSHAFTS

1—By offset cylinders, or to use a more common term, an offset crankshaft, is meant that the axes of the cylinders are not in the same vertical plane as that of the crankshaft. The difference between a motor with offset cylinders and cylinders located directly over the crankshaft is indicated in Fig. 1. The motor with the cylinder located directly over the crankshaft is shown at the left of the illustration and it will be noticed that the line A passing through the center of the cylinder also passes directly through the center of the crankshaft. At the right in the illustration, a motor with an offset crankshaft or offset cylinders as you choose to say, is represented. The line C which passes through the center of the cylinder is some distance to one side of the line B which passes through the center of the crankshaft. Some of the advantages claimed for the offset crankshaft are less liability of a back kick, reduce wear on the bearing surfaces of the cylinder walls, connecting rods and crankshaft, less liability of the motor to be stalled when the car is running slowly on a high gear, and other constructional facilities.

2—If you will give the name of the car to which you refer in order that one may get a clearer idea of its construction and operation, Motor Age may be able to answer your question.

3—Motor Age never has seen the Metz car under test, but as it has no radical features, sees no reason why it should not give efficient service. The design is extremely simple, and based on sound engineering principles.

LOAD CAPACITY

Muscatine, Ia.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following: I have a four-passenger Mora, 1909 model, and I am inclined to think that I do not get enough power out of it. The weight of the car is 2,600 pounds, the cylinder sizes 4 by 5⅛, and the engine is geared three to one which figures about 95 to 100 pounds per horsepower. Are cars made with 50 to 65 or 70 pounds to the horsepower and capable of doing all kinds of road work. I use my car in the livery business over country roads and want one capable for this kind of work.—Wilson Rice.

Generally the heavier the work a car is called upon to do the heavier must be its construction. It may be quite possible that you will be able to get a car of lighter weight than your own with perhaps a greater load capacity, more power and more speed, but whether it will stand up as well as a heavier one depends to a greater extent upon the treatment to which it is subject. Motor Age would advise that you consult the advertising columns and see if anything is offered that will meet your requirements, then consult the manufacturers of those products as to their weight, power, capacity, etc. The ability of any car to stand up and give satisfactory service depends to a very great extent upon the care with which it is operated and maintained.

OPENING A GARAGE

Lansing, Mich.—Editor Motor Age—I am considering investing some money in a garage, and would appreciate it if Motor Age could answer the following questions in the Readers' Clearing House columns:

1—What is the best time of year to start a public garage?

2—In a city of 300,000 what amount of money would be necessary to equip a garage—not counting rent?

3—Is it a good idea to have the repair room on the second floor, using the ground floor for storage and show room?

4—Does a garage owner insure the machines stored with him against loss by fire?

5—What are reasonable rates for dead storage, and for storage with care in city of the size above mentioned?—H. O. B.

1—Undoubtedly the best time of the year for opening a public garage is in February. At that time owners are getting their cars out of dead storage, are buying new machines, or if they are dissatisfied with the place in which they are storing their cars they are prepared to make a change.

2—It doesn't make much difference as to the size of the city. It is estimated that a garage 100 by 125 feet and one story high, capable of accommodating forty cars, can be equipped at a cost of around $1,000, which would include wash rack, lathe, and other machinery necessary for the operation of the repair shop.

3—While one-story garages are most common, still there are many garage men who favor a two-story building so that the second floor can be used for the repair shop.

4—A garage man does not insure the cars stored with him, that being something which the owner himself must attend to.

5—It would be hard to quote garage

Clearing House

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated

rates, for they vary according to conditions in cities. In Chicago the charge for dead storage is generally about $5 per month. What is called live storage, which consists of simply placing a car in a garage and without such attention as washing and polishing, costs $10 a month for a runabout, and $12.50 for a touring car. When the car is washed and polished, this rate advances to $15 per month for a runabout, $20 a month for a five-passenger touring car, and $25 a month for seven-passenger touring car.

TYPE OF AXLES

New York—Editor Motor Age—I would like to submit the following questions to the Readers' Clearing House:

1—What are the relative advantages and disadvantages of the semi and full-floating types of rear axle?

2—May a car entered in a stock contest use heavier wheels and tires than regularly supplied to purchasers?

3—Is a chain-driven car any faster than one with shaft drive, all other things being equal?

4—Is the Apperson Brothers Automobile Co., maintaining a racing team this year, and does it intend to enter any contests? —Martin Burkelman.

The chief advantage of a full floating type of rear axle is that the entire working portion can be removed without disturbing the wheel adjustments in any way, it being simply necessary to remove the hub caps of the wheels and draw out the transverse driving shafts so that they clear the squared sockets or other means of connection in the differential mechanism and bevel gear, then remove the cover of the bevel gear and differential case, and loosen the bearing caps which hold these mechanisms in place. In the semi-floating type of rear axle it is necessary to jack up the rear end of the car, disconnect the springs from the axle casing and then almost entirely disassemble the rear axle mechanism in order to make any repairs on the differential gearing. The semi-floating type of rear axle is quite a simple construction however, and, it is claimed, has advantages over the full floating type in the way of manufacture.

2—The wheels of a car entering a stock contest must be of the same diameter as specified as regular equipment in the manufacturer's catalog and the tires also must be of the same dimensions.

3—Up to date, the fastest cars are chain-driven. The chief advantage of the chain drive is great strength with light weight. The rear axle being of the dead type is of simpler construction than the divided axle required for the bevel drive and it is perfectly adapted to support the car. Against this is the objectionable noise made by the chain, the difficulty of keeping it clean and lubricated, also the wear and stretching. The bevel drive being enclosed in a tight casing has the advantage of perfect lubrication, with all parts running in oil and freedom from dust. The quiet running of the bevel drive more than offsets its disadvantages such as the necessary divided live axle with the heavy bracing required so that the imposed weight may not bend or spring it out of line. The popularity of the bevel drive is attested by its general adoption on all types of motor cars except the high-powered racing cars and commercial trucks.

4—The Apperson car has contested in California events this year, but the company is not maintaining a racing team.

ADJUST THE CARBURETER

Oelwein, Ia.—Kindly advise me through the Readers' Clearing House on the following:

1—What adjustments are necessary to make the motor go slower on a model 10 Buick?

2—What is wrong, in Motor Age's opinion, when a Jackson 30 will speed up regularly on level roads and every cylinder will hit regularly, but will gradually die on a hill. I have tried every conceivable adjustment in the carbureter.—Puzzled.

1—An examination of the carbureter on the car above mentioned will reveal a little screw near the throttle lever on the carbureter which regulates the degree to which the carbureter valve may be closed; by backing up on this screw, the throttle valve will be allowed to close more completely and the engine thereby slowed down. If the motor will not throttle down without missing, there may be an air leak between the intake pipe and the cylinders. To test for a leak of this sort, saturate a cloth or bunch of waste with gasoline and hold or wind it around the pipe where it is connected to the cylinders. Do this while the motor is throttled down and missing. If it runs more steadily with the cloth in place there is a leak and the improvement is caused by the vapor drawn in from the saturated cloth. Test each connection separately, then all at once if necessary.

2—Your trouble most likely is due to one or more of the following causes: Either your gasoline supply pipe is partially clogged; there is dirt or water in the carbureter; or the compression in your motor is poor on account of ill-seating valves. Motor Age would advise that you first crank the motor over slowly by hand to test the compression; if the compression is poor have the valves ground. If the compression is good shut off the gasoline at the tank, disconnect the supply pipe from the carbureter, then turn on the supply at the tank again and see if a full stream of gasoline will flow from the end of the pipe. If the gasoline flows with plenty of force take off the carbureter, disassemble and clean it out thoroughly. In disassembling the carbureter and reassembling it again be sure that all parts are properly replaced. A little dirt in the spraying nozzle or a little piece of string or packing, such as is sometimes used to make a tight joint between the supply pipe and the carbureter, has been known to give trouble similar to yours. It sometimes happens that when an attempt is made to drive a car uphill on high gear the motor is slowed down to such an extent that the magneto will not generate a good spark. Weak explosions would be the result of this, and perhaps misfiring.

STRAIGHTENING AN AXLE

Highland Park, Ill.—Editor Motor Age—On a recent trip to Fox Lake I bent the front axle of my Chalmers 30. While going through the woods we came in contact with a stump. The wheels line up about like the illustration herewith, shown in Fig. 2, and the wheels are dished, as shown in the illustration. Would this affect the wear on the tires, that is, would it be greater? Will Motor Age inform me how to straighten the axle and if it will be necessary to heat it. —Reader.

If your wheels converge more than ⅜ inch, that is, if the distance between the felloes of the wheels in front and at the height of the center of the axle is more than ⅜ inch less than the distance between the felloes of the wheel and at the same height behind the axle, the wear on the tires will be excessive, and the greater the degree of convergence the greater the wear. If your axle is only slightly bent, that is, not more than perhaps ½ or 1 inch out of line, it can be straightened cold, but it would be most practical if bent to a greater degree to heat it. This is a job for a blacksmith or a mechanic skilled in the application of heat to metal and Motor Age would not advise you to do it yourself.

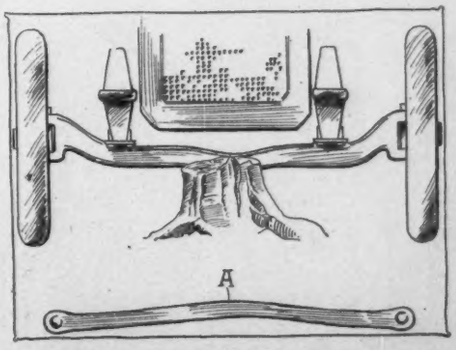


FIG. 2—HOW AN AXLE WAS BENT

The Knox 1911 Series

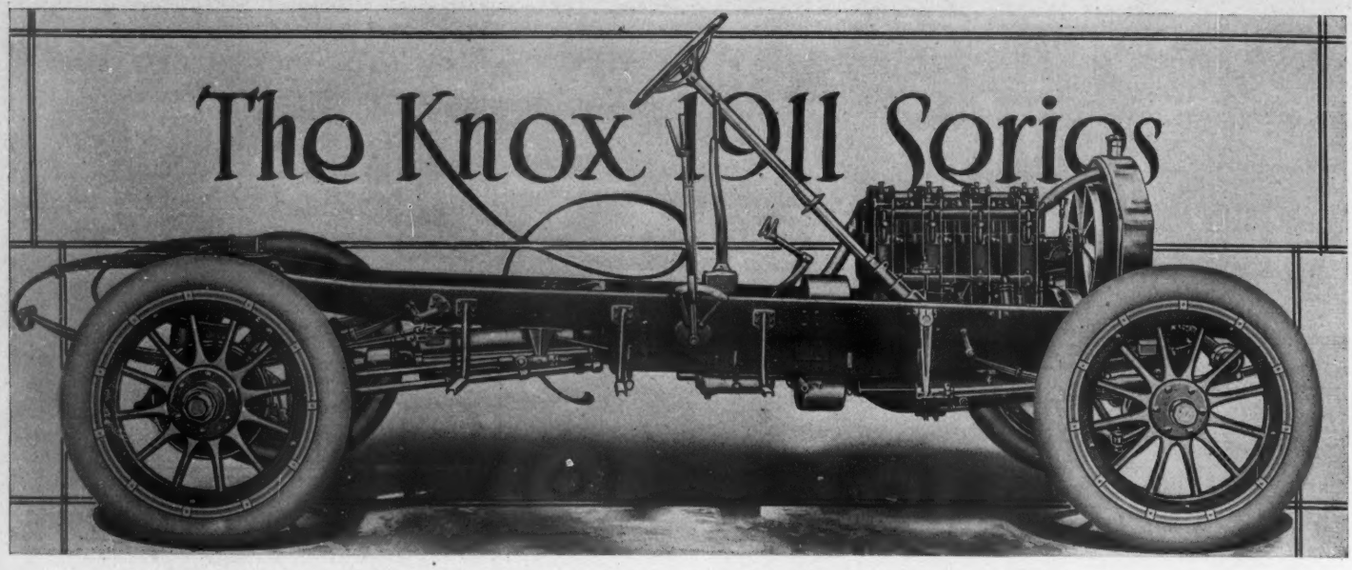


FIG. 1—THE CHASSIS OF THE MODEL R FOUR-CYLINDER KNOX CHASSIS FOR 1911

IN announcing its 1911 series the Knox Automobile Co., of Springfield, Mass., states that hereafter it will discontinue yearly models and any slight changes or added features will be adopted as soon as possible after they have been approved by the experimental and testing departments. The Knox motor cars for 1911, therefore, will show the same original features of construction that have been characteristic of these cars ever since the introduction of the water-cooled types in 1907, chief among which is the unit power plant with its three-point suspension, which comprises a valve-in-the-head motor with detachable heads, a three-plate disk clutch and a selective sliding gearset. Other features to be found on these cars are: Shaft drive, a full floating rear axle, heavy channel steel frame, three-quarter scroll elliptic rear springs, heavy I-beam front axle, worm and nut steering gear, and 38-inch wheels on all types except the raceabout, with 5½-inch Fisk tires of the bolted-on type and demountable rims as standard equipment.

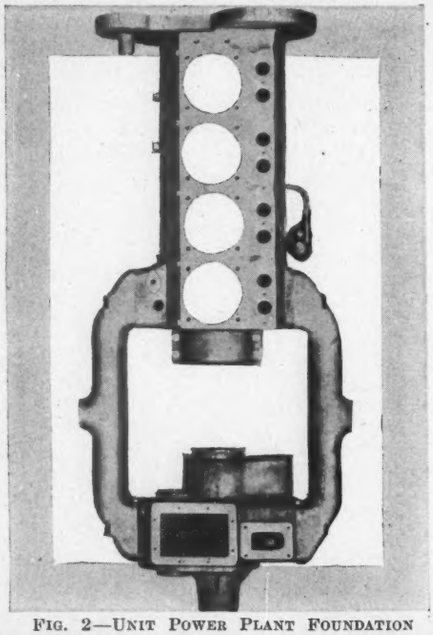


FIG. 2—UNIT POWER PLANT FOUNDATION

Body Types in Series

The different body types of the new models will be designated by series and will include five and seven-passenger touring cars with torpedo-type fronts; five-passenger tonneauettes and raceabouts; and also regular torpedo types which are all made with flush sides, except the touring car and tonneauettes, whose tonneaux widen out back of the rear doors. The tonneaux of the tonneauettes are made detachable. These will be fitted on two chassis models which are known as model R, a four-cylinder 40-horsepower, and model S, a six-cylinder 60-horsepower, the cylinders of both motors having a 5-inch bore and 4¾-inch stroke. These are continued from 1910, with such slight improvements as are the result of another year's experience and general motor car development.

The only mechanical changes of note are in the model R, and these are mostly fea-

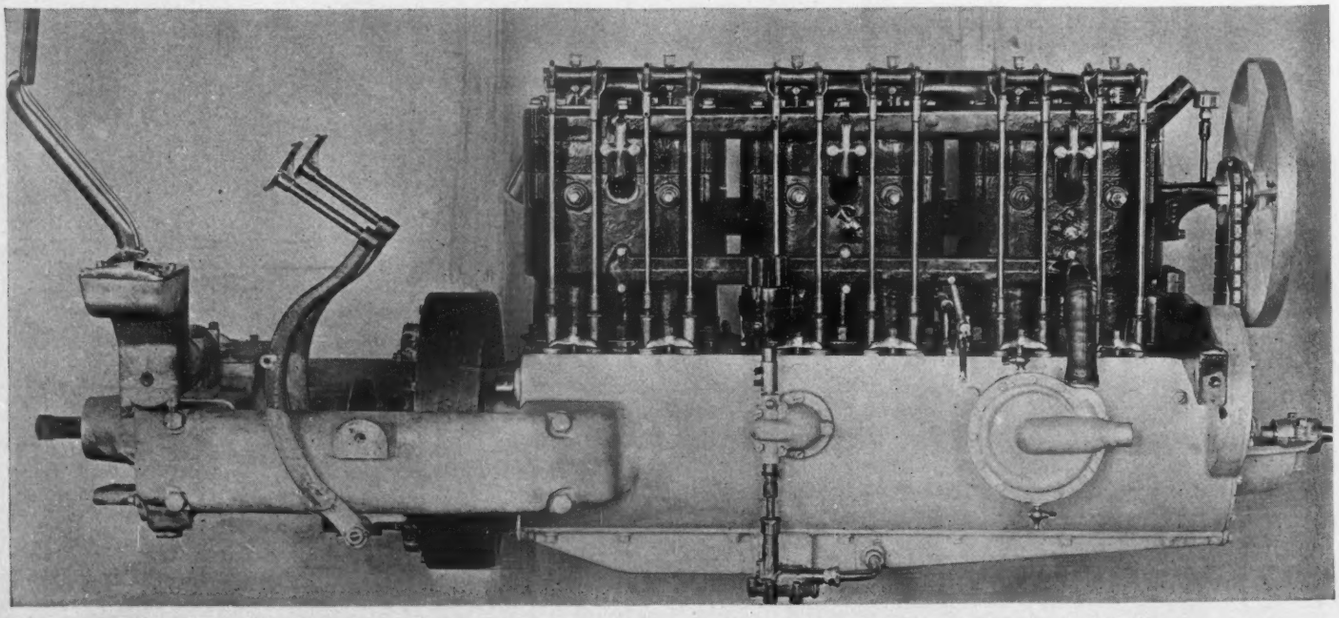


FIG. 3—THE UNIT POWER PLANT OF THE 1911 MODEL S SIX-CYLINDER CARS

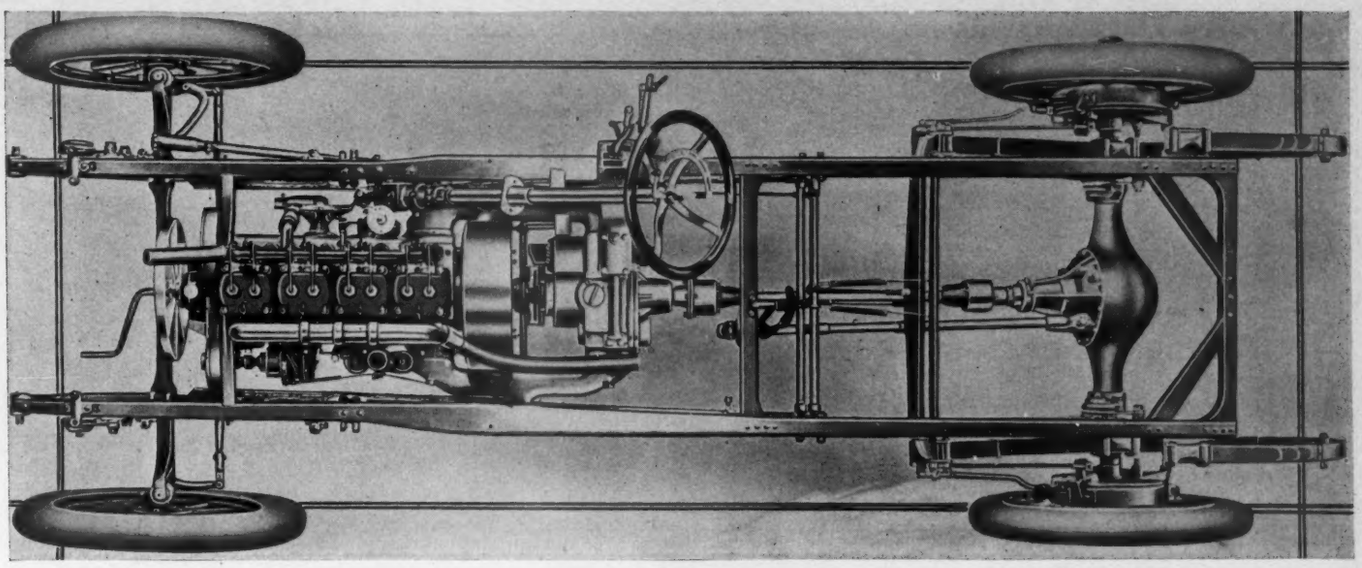


FIG. 4—PLAN VIEW OF MODEL R FOUR-CYLINDER CHASSIS FOR 1911

tures adopted from the model S, the latest Knox chassis, and are as follows: Full floating type of rear axle running on imported Hess-Bright annular ball bearings; additional Hess-Bright bearings for the countershaft of the gearset and improvements on the shifting slide; heavier frame of nickel steel; nickel steel front axle, front axle placed 1½ inches farther forward, and other slight changes in other parts, which are mentioned later.

It will be noticed from the illustrations shown herewith that on the model R four-cylinder motor the cylinders are cast separately, and those on the model S six-cylinder are cast in pairs, the latter being more desirable for a six-cylinder motor with a long crankcase, as it permits of a shorter construction and helps to stiffen the case—from the fact that the bases of the cylinders cover a larger area where they are bolted onto the crankcase. It also will be noted that the water circulation differs in that there is only one water connection for each pair of cylinders on the six, whereas on the four-cylinder there is a connection for each individual cylinder. Except for these differences both the chassis are identical in design, and a description of the model R would almost suffice for both models.

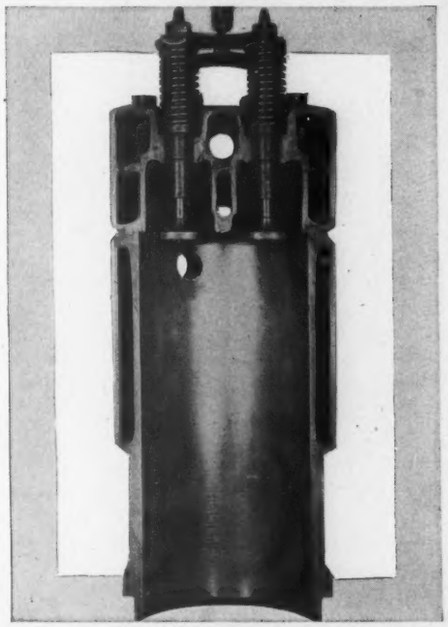


FIG. 5—KNOX CYLINDER, SECTIONAL VIEW

Review of the Features

In Figs. 1 and 4 a general idea of the arrangement of the various features which go to make up the Knox cars may be obtained. In Fig. 2 the foundation of the unit power plant is illustrated. It is comprised of the engine base, which forms the upper portion of the crankcase; two side arms which are bolted onto the rear end of the crankcase, and the housing of the gearset, to which the rear ends of the side arms are bolted. The clutch and clutch-operating mechanism are located in and behind the flywheel of the motor, which occupies the space between the gear and crank cases. This foundation is supported in front by an arched bronze

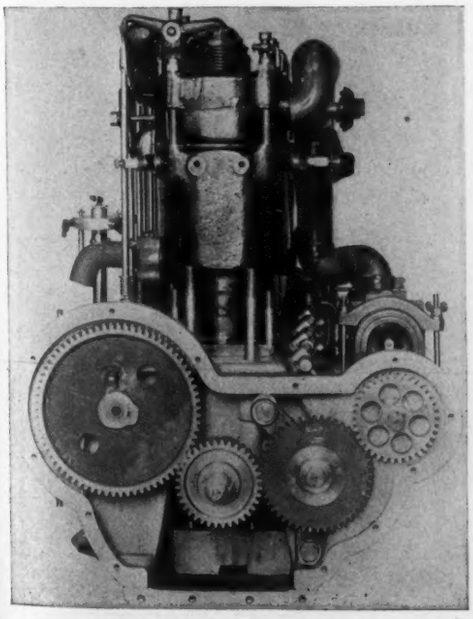


FIG. 6—SHOWING ENGINE GEARS

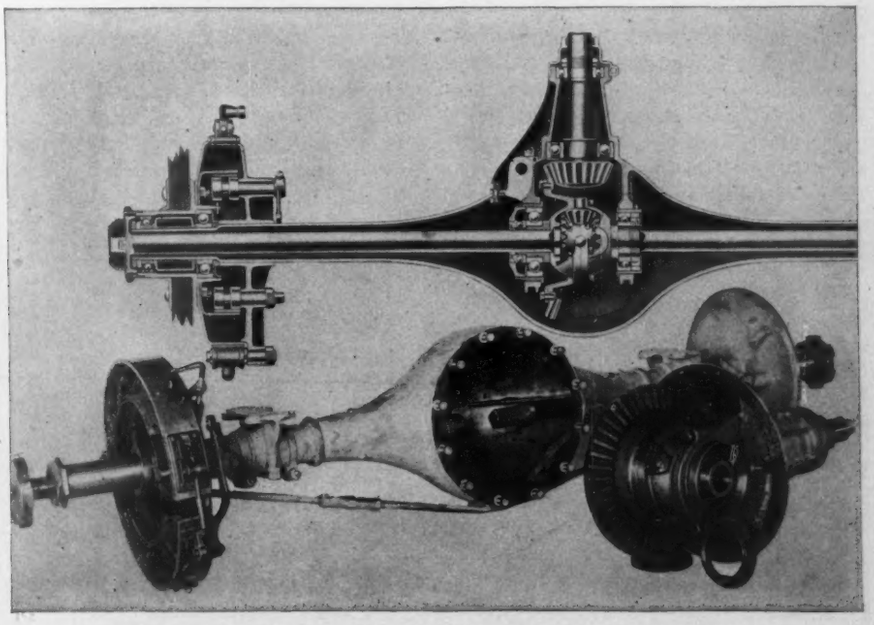
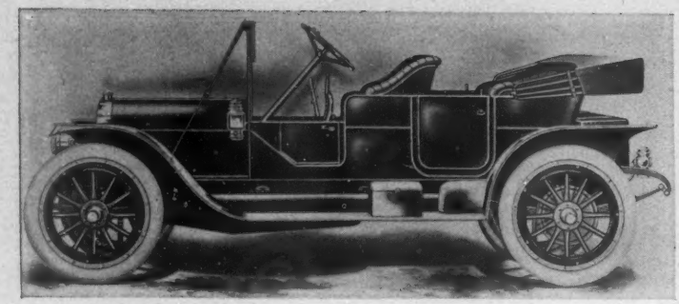
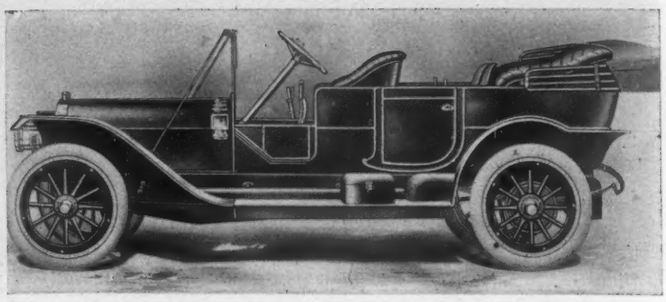


FIG. 7—SHOWING CONSTRUCTION OF KNOX FULL-FLOATING REAR AXLE





FIGS. 8 AND 9—MODEL R CLOSE-COUPLED AND MODEL S SEVEN-PASSENGER RESPECTIVELY, BOTH WITH LOW FRONT DOORS

cross-member through a flexible trunnion, and at the rear, midway between the ends of the two side arms, connection is made directly to the side members of the frame; thus bringing about the desirable three-point suspension. With this construction the gearbox and the two side arms are adaptable for use on either model. Either the motor, clutch or gearbox can be removed without interfering with each other, and by removing the four bolts fastening the cross-member in front and the two side arms of the power plant in the rear, after disconnecting the universal joint between the gearset and the propeller shaft, the entire power plant can be taken from the chassis.

Motor Design Unchanged

The design of the Knox motor remains unchanged except that the magneto idler gear, which at the beginning of the 1910 season was made of fiber, is now of cast iron; it is characterized by the use of separately cast cylinders with detachable heads, in which both intake and exhaust valves are contained. The cylinder construction is clearly shown in the sectional view, Fig. 5. Making cylinders with detachable heads permits of machining and grinding the walls with the utmost accuracy. Having heads separate also permits machining of the combustion chamber so that uniform compression may be obtained in all four cylinders, and the smooth surfaces greatly inhibit the accumulation of carbon deposits. Each cylinder head is held on by four studs and nuts, and by loosening the nuts and the water connections the entire head may be removed for the purpose of grinding valves or removing carbon.

In the upper end of each cylinder casting is a deep groove concentric with the cylinder bore, and on the bottom of the cylinder head is a circular boss which fits into this groove. A copper-asbestos gasket is placed in the groove to form a tight joint. This is not a water joint, but solely a compression one, the water-jacket around the cylinder being entirely separate from that in the head. A short

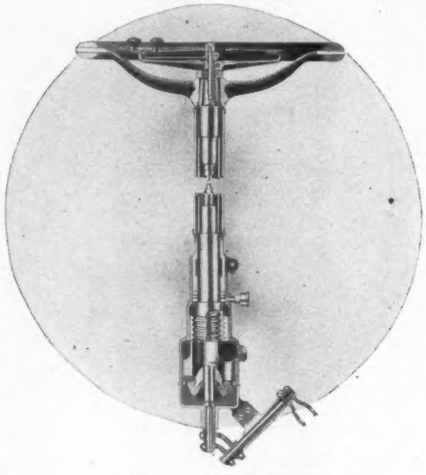
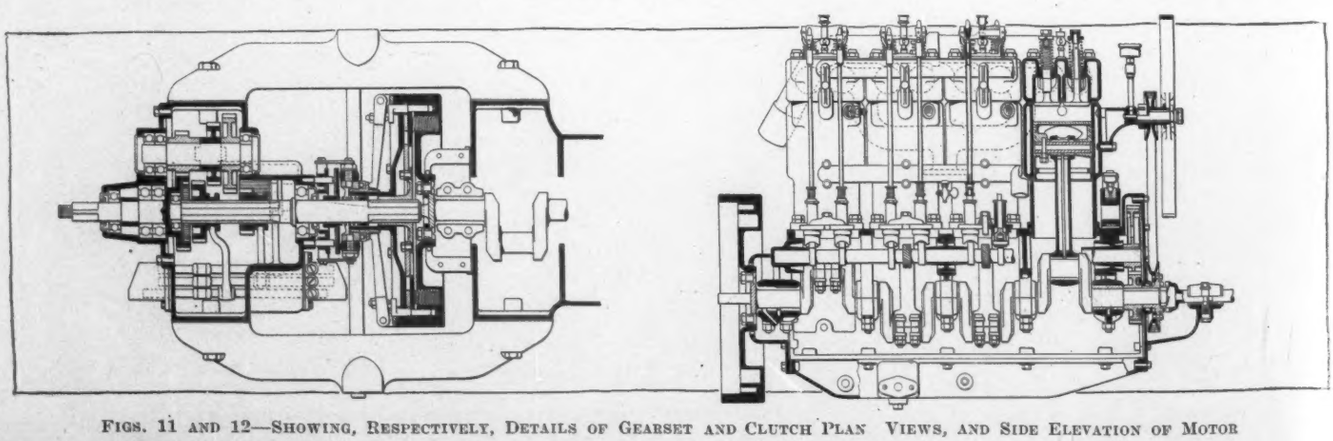


FIG. 10—KNOX STEERING GEAR

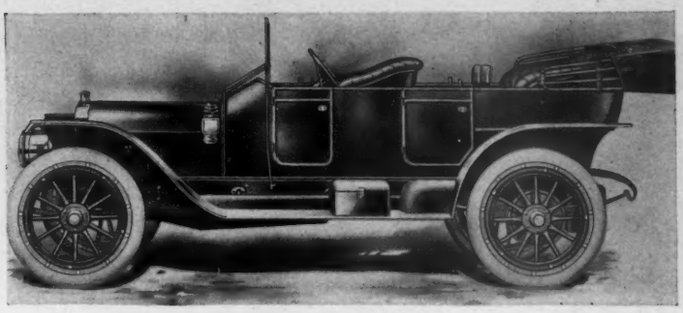
bridge connecting pipe is provided for conducting the water from the cylinder jacket to the jacket of the cylinder head. The valves are all operated through long push rods and rocker arms, from a single camshaft contained within the crankcase. The crankcase of the motor, which is of aluminum, has a removable lower portion which forms the oil reservoir for the circulating oiling system, and the cover of the timing gearcase, which is cast integral with its forward end, also is removable. The crankshafts on both models are made of nickel steel and supported in the upper portion of the crankcase, that of the four-cylinder motor having five bearings and the six-cylinder motor four bearings, all of which are of generous length and made of Parsons white brass.

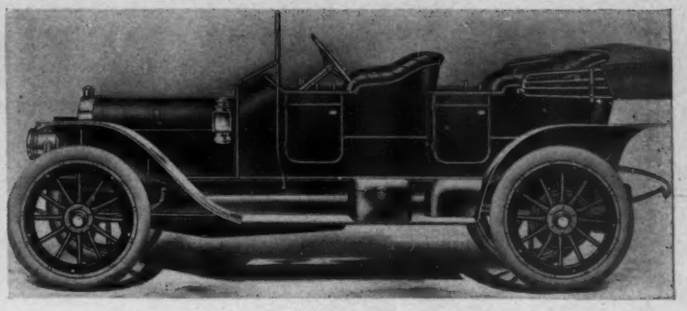
Other Knox Features

Connecting rods are made from nickel steel drop forgings, and the caps are held with four bolts, three thicknesses of shims being provided so that lost motion of the bearings can be eliminated without filing the boxes. In Fig. 6 the front end of the four-cylinder motor is shown with the timing gearcase cover removed. The camshaft and idler gears are of cast iron, and the crankshaft and magneto gears of steel. The idler gear between the crankshaft and magneto is supported on an adjustable bracket, so that lost motion may be taken up between them to maintain noiseless operation. Double ignition is employed on both models, model R having a Bosch magneto, a Connecticut coil and timer, with dry cells and two sets of plugs; while on the model S there is a Bosch magneto and an Atwater Kent system, with two sets of plugs. The position of the magneto on both motors is very convenient, it being located on the left side just opposite the first forward cylinder. The timer is on the opposite side of the motor and also conveniently located. Both the timer and the gear oil-pump are driven through bevel gears and a vertical shaft off the camshaft, the timer being at the upper end of the vertical shaft and the oil-pump at the lower end. This oil-



FIGS. 11 AND 12—SHOWING, RESPECTIVELY, DETAILS OF GEARSET AND CLUTCH PLAN VIEWS, AND SIDE ELEVATION OF MOTOR





FIGS. 13 AND 14—TWO MODEL R CARS WITH HIGH FRONT DOORS, SERIES B A SEVEN-PASSENGER AND A TONNEAUETTE SERIES A

pump draws the oil from the reservoir and delivers it to the main bearings of the crankshaft. The crankshaft is bored so that the oil delivered to these bearings passes on through the throws of the crankshaft, lubricates the lower connecting rod bearings, and then passes up through channels in the connecting rods and lubricates the wrist pin bearings. The cylinder walls are lubricated by the oil which is thrown off the bearings, and means are provided whereby a stream of oil is constantly playing on the timing gears when the motor is in operation.

In the cooling system a large centrifugal water pump located on the right side of the crankcase, and also gear driven off the camshaft, draws the water from the radiator, forces it up through aluminum water connections which are of simple construction and attachment, to the lower portion of the cylinder jackets. Circulating through the cylinder jackets, it passes on up through bends into the jackets of the cylinder heads, makes its exit high up on the side of the cylinder head jackets, and returns through another simple connection to an exceptionally wide flat tube radiator.

Three-Plate Type Clutch

Power is transmitted from the motor through a clutch of the three-plate type, the center plate being provided with cork inserts to insure a smooth engagement. A clutch brake also is fitted to facilitate gear-changing, which consists of a friction disk located just in front of the gearset. A slight change has been made in the gearset for 1911, in that double annular bearings are used at the rear end of both the main and countershafts, and it is claimed this change makes the transmission exceptionally quiet on the low and intermediate gears. Commendable features of the Knox gearset, which gives three forward speeds, are the shortness of the shafts between the bearings, and the general compactness of the design. Many interesting features of the design of this power plant are shown in a sectional view of the motor and the plan view

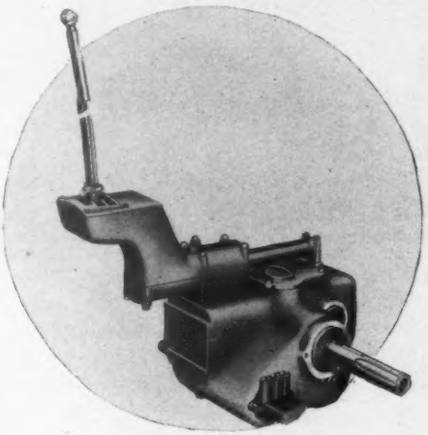


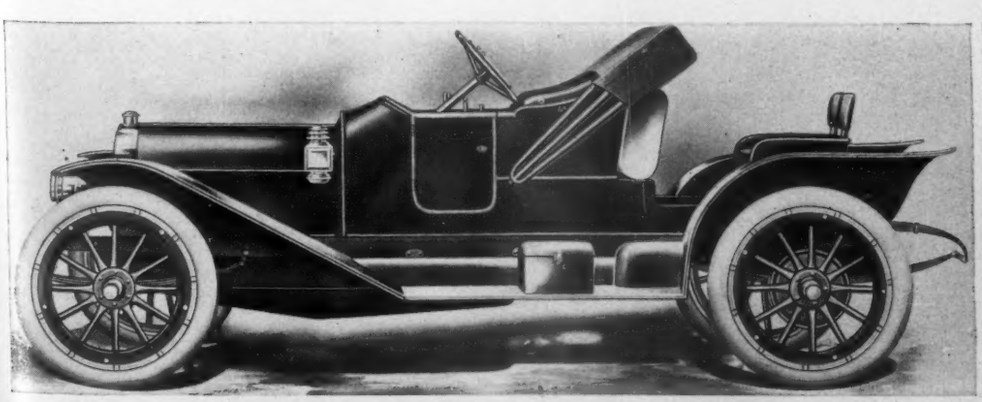
FIG. 15—KNOX SELECTIVE GEARSET

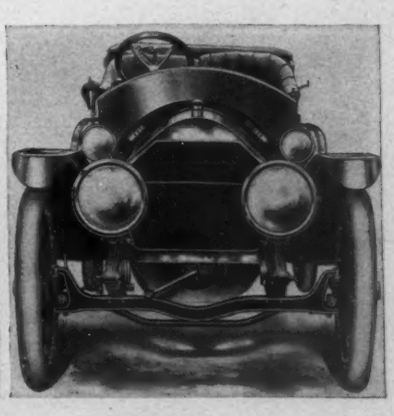
of the rear end of the power plant, which are reproduced in Figs. 10 and 11.

Drive from the gearset to the rear axle is by means of a propellor shaft with two universal joints, both of which are thoroughly encased and packed with grease. The 1911 rear axle construction is shown in Fig. 7. It is of the full floating type, with the weight of the car supported on the outer ends of the rear axle housing. The differential housing is made from pressed steel, with an opening at the front side through which the differential mechanism and driving gears may be readily removed by drawing out the axle shafts and removing the bolts of the pinion housing. The rear axle shafts may be readily detached without removing the wheels, and they have hardened steel clutches on their outer ends, the notches of which fit into corresponding notches in the outer edge of the wheel hubs. Annular ball bearings are used throughout. Timken roller bearings are used for the front wheels and also at the upper end of the steering knuckles—a feature which renders the steering knuckles adjustable for wear and insures easy steering. Brakes are of the contracting and expanding type, operating on individual drums on the rear wheels. Brake bands are lined with raybestos,

Pressed Steel Frame

The frame of the Knox car is made from cold pressed steel, with the top flanges made exceptionally wide at the rear points of support of the power plant, and they gradually taper toward the rear. Three cross-members are used besides the bronze support which carries the trunnion at the front end of the power plant and the two rear points of support on the yoke, all of which help stiffen the frame. Besides this, the rear corners are braced with gusset plates and the cast aluminum radiator support serves the same purpose at the front end of the frame. The model R wheelbase has been lengthened from 117 to 122 inches on all models excepting the standard two-passenger raceabout, which will remain 104 inches, as in 1910. The model S wheelbase for all of the regular models is 134 inches, and on the standard raceabout it will be 106.





FIGS 16 AND 17—SIDE AND FRONT VIEWS OF MODEL R TORPEDO ROADSTER WITH HIGH DOORS AND TANK BEHIND SEAT

PROPER BLOCK-TESTING OF MOTORS

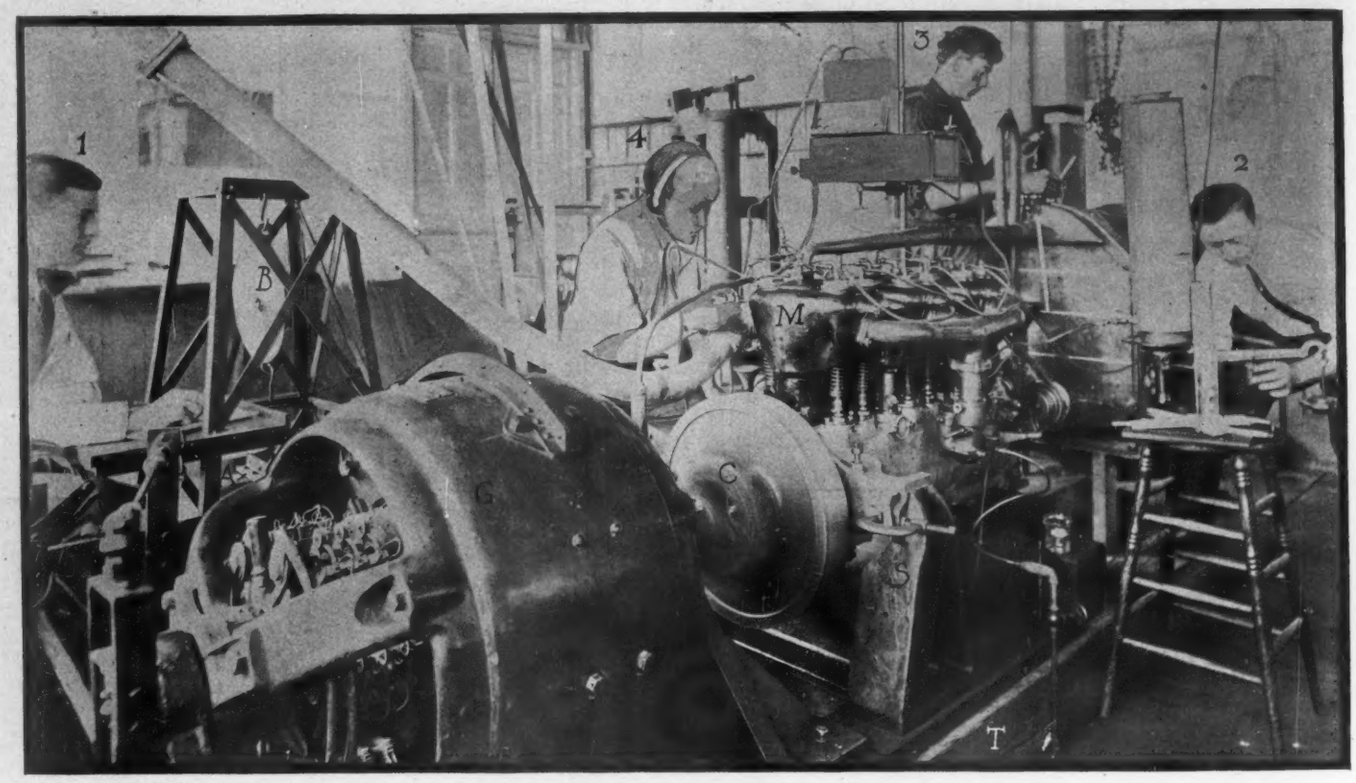


FIG. 1—ELECTRIC DYNAMOMETER USED IN TESTING A MOTOR CAR ENGINE

By J. N. L. Howe

THE importance of properly block-testing motor car engines is being realized more and more every year by manufacturers. A comparatively short time ago it was thought that a good test of the motor on the road was all that was necessary to economically produce cars that would give uniform or standard results. The car of today is a highly complexed piece of mechanism, being composed in the main of a number of different units. The adjusting and testing of these various units so as to produce a perfect whole is a problem that has called for deep study by the engineering force. The testing of the various units before assembling into a chassis has shown an economic gain that warrants a certain initial outlay for proper testing equipment.

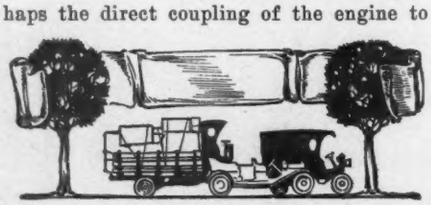
The Block-Test Department

The duty of the block-test department consists of taking each new motor after being assembled and turning it over to the chassis assembling department and finally the road test department with the guarantee that it is in perfect condition. To arrive at this condition it is necessary that even down to the smallest part each piece properly performs the function for which it was designed. The process of turning out a tested motor in brief is as follows: First, a proper inspection to see that the assemblers have done their work correctly, then the limbering up of the working parts by being run or jacked in on oil by some external source of power. After this is accomplished, the engine caused to run light, that is, generating only enough power to run itself, then finally a load put on it and a test made of its ability to generate power continuously. Through the different stages its action should be carefully noted by experts and adjustments made if necessary. The motor now, if coming up to the standard with others of the same type, is passed on by an inspector who allows it to be assembled in a chassis.

There are a number of methods in common use to test a motor under load and determine its ability to develop power. While some of these do fairly well for experimental purposes, not all work out commercially. For commercial testing the ease of operation and a capacity to handle motors rapidly is of prime importance. The different principles employed may be classed under electrical, frictional, air and hydraulic methods. Some of the methods described below may not be strictly classified as given, but are commonly known as such.

Electrical Testing Methods

The most common electric method is perhaps the direct coupling of the engine to



a small generator, G, Fig. 1, the current produced either wasted or used for light and power purposes. If wasted it is generally absorbed by a bank of lamps, grid or water rheostats. At least one of the leading American firms has worked out a method whereby the electrical energy produced is used largely to supply the factory needs for power and lighting.

The idea of block-testing motors and at the same time generating power looks highly attractive at the outset. The larger firms having on the average of twenty-five to thirty motors at various stages of test apparently should produce enough power so that the problem of current supply from this source looks simple. If, however, the question is further considered, the initial outlay for equipment amounts to a larger sum. Electric equipment consisting of suitable small generators, switch boards, etc., will figure up roughly in the neighborhood of $1,000 or $1,500 per motor stand. Where electric power is cheap it will be readily seen that the net saving if any will be small. The motor block-test room, the writer believes, should not be burdened with the duty of supplying power, as its purpose is primarily to turn out perfect motors at the least possible expense, and if further burdened it is up to the engineer in charge to try to meet both demands without sacrificing either. With the above system, the power determination of the motor on test is made usually by calculating from the individual electrical output of engine

and generator unit, knowing the efficiency of the generator at different speeds.

Power Generated by Motor

A far simpler method of determining the amount of power generated by the motor is shown in Fig. 1. The motor M is mounted in a heavy cast iron stand S which is in turn bolted down on two heavy timbers T fastened to the floor. A flexible leather clutch C connects the motor and generator. The electric generator G is a 42½-kilowatt specially-wound Sprague, the field casting of which is trunnioned on ball bearings permitting a slight rotation. Any force causing rotation, however, is resisted by a 3-foot arm A bolted to the field and having its outer end connected to a spring balance B held by the iron frame work shown. The field of the generator is excited separately by direct current from the power supply of the factory, and its strength may be easily varied by means of a small rheostat which is in easy reach of the man at the scales. The current produced by the armature is dissipated as heat in a series of grid resistances hung from the ceiling. A small switch board controlling the different circuits is provided, and a gear-driven tachometer in close proximity to the operator indicates the number of revolutions of the apparatus. The carbureter and ignition advance of the motor are led to the rear and easily controlled by the small levers at the operator's right hand. The cooling system for the motor consists of an electric fan drawing air through a radiator, thus producing conditions similar to those in a car.

Commencing a Test

In commencing a test, the generator is started as an electric motor, thus spinning the engine. The ignition system is next cut in and the generator switched over to the resistance with the engine driving. The influence of the rapidly revolving armature tends to drag the field with it, but this pull is resisted by the arm and

indicated on the scales in pounds. After the conditions become steady and the speed of rotation is correct a simultaneous reading of the tachometer and the scales gives all the data necessary to calculate the power developed by the engine at that moment. From the simple formula for horsepower—

$$\text{Horse power} = \frac{2nw\,ln}{33{,}000}$$

When W = net weight in pounds on the scale
l = length of arm in ft.
n = number of revolutions per minute.

a graphical chart was constructed which gave the horsepower developed at a glance. In connection with Fig. 1 the operator No. 1 is taking readings of the speed, and the pounds load pulled by the engine; No. 2 the weight and specific gravity of the gasoline used; No. 3, the temperature of the ingoing and outgoing cooling water and No. 4 trying to locate any mechanical trouble by means of an instrument similar to a doctor's stethoscope, called a Phonendoscope.

The electrical method of engine testing undoubtedly possesses many advantages, such as the ability to reverse the generator, and run in or start the motors; but the chief objections are high initial cost, commutator trouble due to great speed range required and complicated wiring. Besides the two main electrical methods of measuring power, there are several other electrical devices but not used to any extent commercially.

Under the heading, frictional motor testing, may be classed apparatus for absorbing power, as various types of prony brakes, and other styles depending directly on friction for their action. The writer once made a series of tests using the type of prony brake shown in Fig. 2. An internally-flanged wheel W was mounted on a shaft and connected to the engine. Two iron straps S encircling the drum and lined with wood blocks B were fastened to the wooden brake arm A by eye bolts provided with regulating nuts. By this means the frictional resistance between the wheel and the brake could be controlled at will. The long end of the arm A was provided with a knife edge which rested on scales. Water under city pressure was piped so that a stream played against the inside surface of the wheel in the direction of rotation. Centrifugal force caused a film to lie against the outside of the wheel and the heated water was carried away by a scoop arrangement.

It was found necessary to continually adjust the tension of the bands to keep the load uniform, and if the engine speed suddenly dropped, stalling occurred. The prony brake at best is dirty and of little value for commercial testing.

The Alden brake is another type, but with the regulation controlled hydraulically. This brake consists, in brief, of a flat disk revolving in a suitable casing, and against each side of the disk a copper diaphragm is forced by hydraulic pressure. The heat generated by the friction of the rubbing surface is carried away by the water. The tendency of the casing to turn is weighed and from that and the speed, the horsepower absorbed can be calculated easily.

This brake has a number of points that recommend it to the block-test engineer, principally its ease of operation and range of load regulation.

Measure Power by Air

Air offers considerable resistance to rapidly revolving blades or fans, and this property is made use of in the fan dynamometer. The common form of this apparatus is two thin rectangular blades

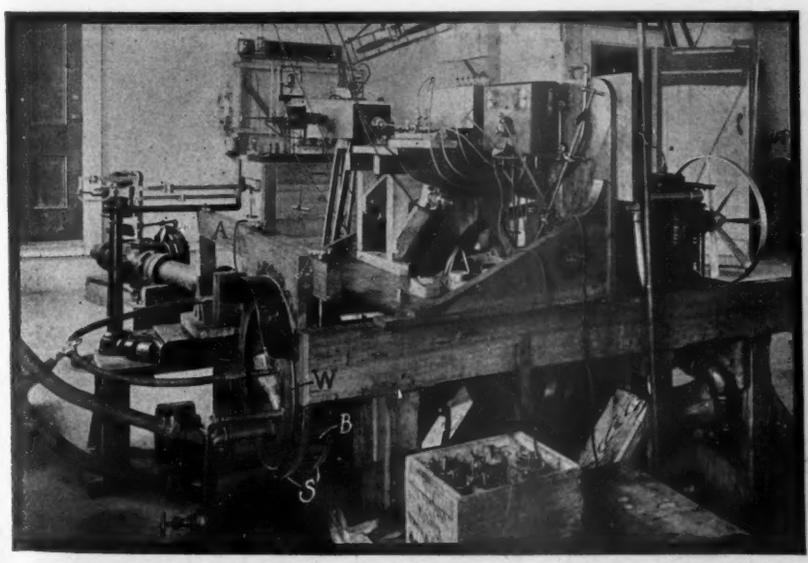


FIG. 2—TESTING MOTOR BY MEANS OF PRONY BRAKE

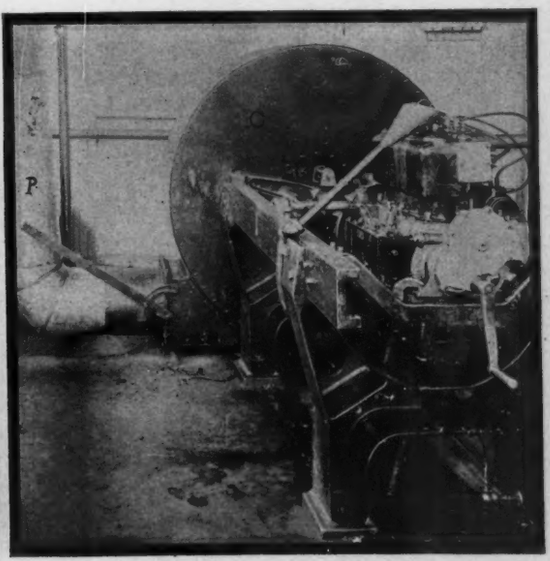


FIG. 3—TESTING MOTOR BY FAN BLADES

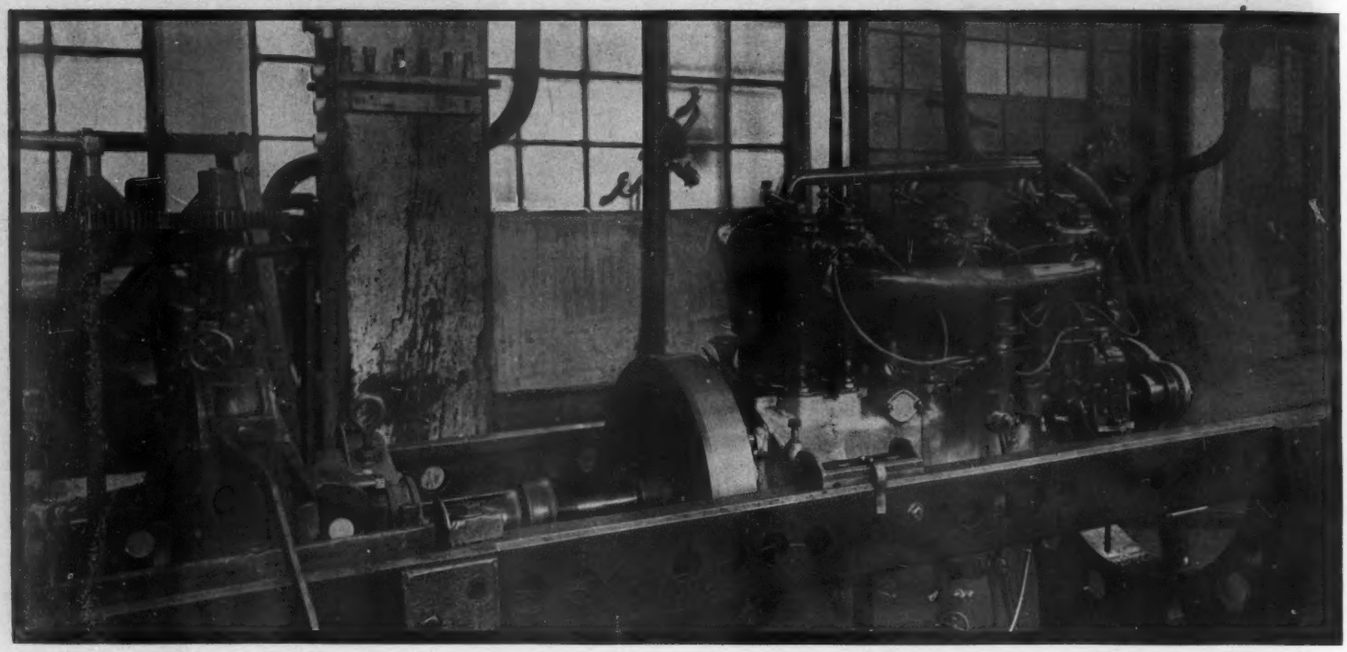


FIG. 4—TESTING MOTOR IN FACTORY BY HYDRAULIC DEVICE

fastened at equal distance from the center of a revolving arm. The shaft of the arm is generally mounted on ball bearings so that the friction will remain practically constant under different conditions of lubrication. The fan is directly connected to the motor to be tested and the speed of rotation depends upon the area of the blades and the distance between their centers.

By varying either the power absorbed at a given speed of rotation can be changed. The blades may revolve in the open air or else in a casing, C, Fig. 3. The blades in the brake are 10 by 15 inches, their center distances being adjustable from 24 to 40 inches, thus providing a big range of power absorption. The casing is of $\frac{3}{16}$-inch boiler plate and the fan is mounted on ball bearings. A jaw clutch is provided so that the motor can be disconnected at will. The air is drawn in through the two openings at the center of the casing and is expelled tangentially through the large outlet pipe. A damper similar to a stove damper is provided which gives additional regulation of the power absorbed, contrary to first impression, the closing of the damper causing the engine speed to rise. The explanation of this, however, is very simple when we consider that the power absorption is due to imparting velocity to the air entering the center openings. The closing of the damper of course reduces the amount of the incoming air and the speed of the motor rises until a fresh balance is struck between the power developed and that absorbed. If the damper is totally closed all the power absorbed is due to the friction caused by churning the air in the casing. The determination of the actual power absorbed by a fan brake is quite complicated until the brake has once been calibrated. For this purpose, the most accurate method is to drive the fan by an electric motor, with different positions of the blades center to center and different positions of the damper. Tests also will have to be run at different speeds of rotation. Knowing the efficiency and the watts consumed by the electric motor, the power absorbed may be calculated and plotted as calibration curves for engine testing. For commercial testing, the absolute power developed by the engine need not be known, but the comparison of the number of revolutions per minute that the engine under test is able to drive the fan to that of other engines of the series give an indication as to whether the motor is developing the proper power or not. With a set adjustment of the blades and the damper, the revolutions per minute of different motors of the same size will vary only a few revolutions. For commercial testing the density of the atmosphere may be neglected.

Advantages Are Many

The advantages of this method of testing motors are many. The fans shown are capable of absorbing up to 30 horsepower at 1,000 revolutions per minute and the power absorption above that increases very rapidly with the speed. The fans, besides serving the purpose of a brake, are very useful for ventilating purposes, by keeping the air in the test room pure and cool. Another advantage is the inability of the apparatus to stall the engine. The equipment shown cost in the neighborhood of $150 or $175 per stand. Fig. 4 shows a type of hydraulic brake that is employed with great satisfaction. It depends for its action on fluid friction and centrifugal force. The rotor or wheel within the casing C has a central partition on which radial blades inclined in the direction of rotation closely approach similar blades, but inclined in an opposite direction, cast in the housing. Water under pressure is forced in a fine stream in an opposing direction to the blade of the rotor and is thrown by centrifugal force toward the periphery of the wheel, producing considerable pressure and fluid friction. The brake is controlled by restricting the waste water, thus causing increase of pressure and by the regulation of four gates controlled by gearing which expose more or less of the adjacent rotor and casing blades surface. The casing is trunnioned and the pull measured by spring scales. The advantages of this type of brake are numerous for commercial block-testing. In the first place, the cost is very reasonable and the size and weight for the power absorbed very small. The brakes shown will absorb up to 80 horsepower at 1,100 revolutions per minute and weigh in the neighborhood of 450 pounds apiece. There are several other hydraulic methods, such as a screw propeller turning under water, or a simple disk submerged; but the power absorbed is hard to determine without first calibrating. Motors may also be used to jack in green ones or else to drive air compressors, or like machinery.

Other Methods Described

Modern methods of block-testing are well exemplified in the block-test department shown in Fig. 5. The test room is adjacent to the motor assembling department and connected by a bridge and plat-

form which easily allows the motors to be picked up by a traveling crane and dropped into any testing stand that may be vacant. The test room is very light and well ventilated, being of the saw tooth construction, 35 feet by 110 feet long. Imbedded in the concrete floor are six rows of very heavy iron T slot rails, making an excellent foundation for three lines of testing stands lengthwise of the building. The testing stands are also of heavy cast iron construction, the stand being connected by cast rails on which the motors may be bolted. The water, gasoline and natural gas connections are laid in troughs in the center of each row and brought up under each stand, making a clean piping job. A special individual exhaust system with universal joints takes care of the waste gases and permits quick connections. The three rows of stands are served by two 1-ton Niles-Bement-Pond traveling cranes, so that the transferring of a motor from one end of the room to the other, and across, is readily accomplished. Two lines of shafting provided with suitable friction clutches are so arranged that the power developed by any engine in the room may be by means of belts used to start or jack in other motors wherever placed. An electric motor also is installed to furnish power if need be. The equipment to determine the power developed by the different motors consists of three hydraulic and three fan brakes, described above.

After a motor is assembled and approved by an inspector, it is turned over to the block department for breaking in and test. The motor is jacked in on oil by means of a belt from the line shaft until the working parts, such as pistons, bearings, etc., have limbered up and show the assembling to be perfect. It is then allowed to run light under its own power on natural gas and finally under a load on one of the fan brakes. After a number of hours under this load, the motor is taken to a special adjusting stand which may be turned at any convenient angle, thoroughly inspected and the bearings readjusted. If every detail is satisfactory, the inspector then permits the final test for horsepower developed at speeds ranging from 600 to 1,500. These tests are made with the same carbureter the engine will have when finally in a car. The action throughout all these tests is watched in a most critical manner; the action of the pump, lubricator, etc., all receive their due attention.

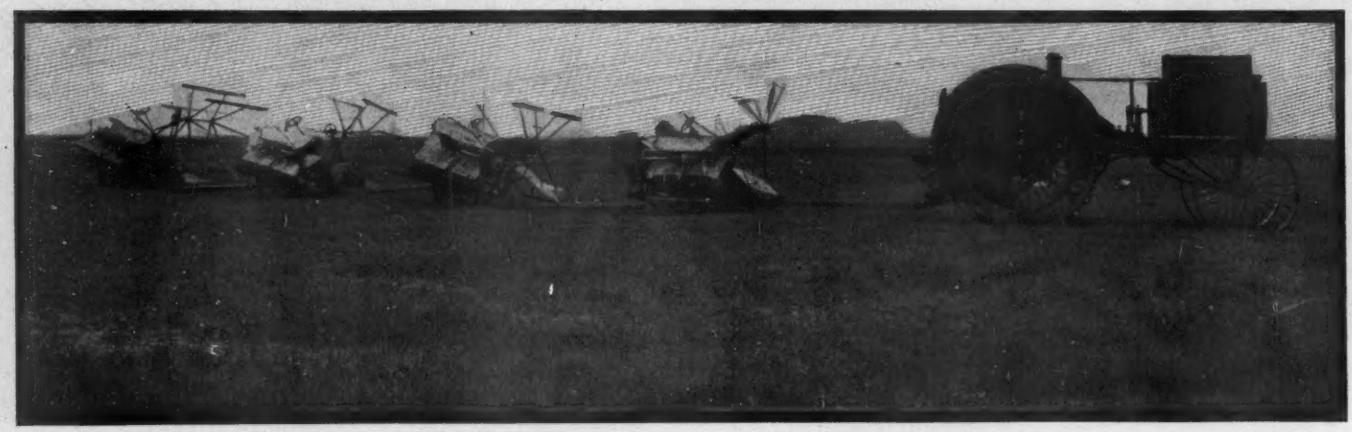
Tests Carefully Watched

If the power developed has equalled or exceeded at every speed that specified by the engineering department, a report card is filled out. This card gives what is known as the characteristic curve for that particular motor, also all data connected with its behavior while in the test room. The tested motor is again rigidly inspected, and turned over to the chassis assembly department, where it is assembled with other units to make a complete car ready for its road test. Should the slightest fault occur, the engine is turned back to the assembling department and the fault corrected before the final test for power is allowed to be made.

INDIANAPOLIS BUILDING ACTIVITY

Indianapolis, Ind., June 27—There will be a striking change in the motor map of the city this fall, when the numerous garage buildings and salesrooms now under construction will be completed. One-sixth of the aggregate amount of building permits issued so far this year by the city has been for garages, the total cost of the buildings under construction being $345,000. The most important bit of motor building under way is, of course, the new motor row in North Capitol avenue, north of the Fisher Automobile Co., where seven buildings for sales and garage purposes are being erected. The Archey-Atkinson Co., which, by the way, has just taken the agency for the Pierce-Arrow, and the Willis-Holcomb Co., which has the Packard agency, are building in North Meridian street. The Inter-State Motor Sales Co. and the Peck Motor Car Co., representing the Inter-State and Cadillac, respectively, will also be located in North Meridian street before long. T. A. Wynne has built a garage at North and Roanoke streets, while S. E. Rauh has erected a building in North Alabama street which is occupied temporarily by the Inter-State Motor Sales Co. The Moon Motor Car Co., now in Kentucky avenue., is building in North Capitol avenue. W. H. Lee has built a garage in North Meridian street. This is 60 by 80 feet and of a waterproof concrete block, known as cast stone. The E. B. Martindale estate is erecting a building in North Meridian street which will be used for motor purposes, while A. M. Fitch will build a garage at 906 Scioto street. Another building to be started at once will be that of Estella Johnson at 325 N. Pennsylvania street. The Overland Automobile Co. recently completed a factory building at a cost of $10,490, while the Link Belt Co. has under way a factory building to cost $41,000. A factory building has also been built this year by the Hercules Electric Co. The advent of the speedway has been of marked benefit in arousing motoring enthusiasm in Indianapolis.

FIG. 5—TYPICAL FACTORY TESTING ROOM, WITH MOTORS UNDERGOING TEST



MOTOR OUTFIT USED ON THE GRAHAM FARMS AT WASHINGTON, IND., SHOWING FOUR REAPERS

HOOSIERS TRY MOTOR PLOW

THE first farm motor plow to be brought into Indiana reached the Graham farms of 1,600 acres, 5 miles north of Washington, Ind., June 10, and it was immediately put to work pulling a gang of eight plows, with harrows trailing behind. The farm motor is in fact a gasoline traction engine, which represents an adaptation of the motor idea to general farm traction purposes. Instead of being a complex piece of mechanism designed to carry passengers and develop high speed, it is built to pull heavy loads at the moderate speed of 3 to 5 miles per hour, and can be used in any service, such as plowing, harrowing, seeding, threshing, etc., and with wagons hitched one behind the other it is capable of hauling a carload of grain to market.

The big machine has a four-cylinder engine of 50 horsepower. It has a radiator and fan to keep the engine cool, and employs a magneto in the ignition system. The power plant looks like and performs like the power plant of almost any standard touring car.

This latest agricultural evolution comes

In the Realm of the

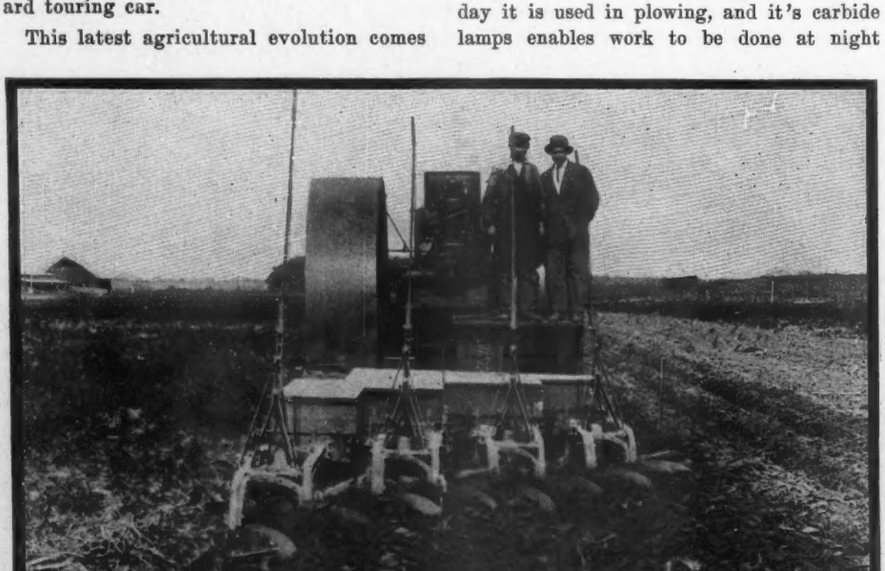
on the scene at a time when the world is ready for it. Every farmer is more or less familiar with mechanical power and all are not only awake to economic advantages, but realize also that they must keep pace with new methods for cheapening product in order to succeed in the great competitive struggle of modern industrial life.

On the Graham farms today the motor traction car is pulling eight plows, but it is capable of pulling fourteen. It has a pulling power of 7,000 pounds, the pull being on the drawbar. The farms are being plowed to a depth of 8 and 10 inches, and breaking 30 acres a day is considered an average day's work, and this at a cost of $2 a day for the engineer, or should he be called the chauffeur? Four gallons of lubricating oil per day is used, and 2 gallons of gasoline per acre. It does the work of thirty horses and fifteen men each day it is used in plowing, and it's carbide lamps enables work to be done at night as well as in the day. By the aid of the automatic guide the engineer need pay no attention to steering, except in turning at the ends. He is thus free to overlook the work of his engine and plows as occasion requires. The automatic steering device mechanically guides the engine and turns an absolutely straight furrow with mathematical precision. By reason of the engine's relatively light weight, its 8 feet high drive wheels 18 inches wide, and its perfect hold on the ground secured by its conical spurs, it can plow not only to the very edge of sloughs, but pass through shallow places and resume the furrow in an unbroken line on the other side.

The new plan of farming is attracting hundreds of wealthy land owners to the Graham farms, where they are shown about by Ray Graham, the manager of the farms, who is a graduate of an agricultural school. At times there are from twelve to fifteen interested farmers riding upon the platform of the gang plow, but the engine moves right along as if proud to demonstrate its great strength. While it does the work of thirty horses, and doesn't require feed while it is not at work, it cannot at present entirely supplant horses, as they still will be needed for light hauling and for the cultivation of the fence corners.

The argument has been put forth that the motor plow cannot be successfully operated upon a farm of less than 160 acres, but already the farmers who own adjoining farms are planning to pool their interests and with one engine and one gang of plows, tend to from four to eight farms. And this is but the beginning of gasoline-driven machinery upon the farm. The day is not far distant when the inventive American will have upon the market gasoline-driven farm machinery of every description, and every farmer and every farmer's boy will be a chauffeur.

Farmers who keep in close touch with



MOTOR TRACTION CAR PULLING EIGHT PLOWS

AS THE MOTOR PLOW LOOKS IN OPERATION AT WASHINGTON, IND.

Commercial Car

new devices for lightening their labors and increasing their profits already have marked the rise of this new and revolutionary change in farming methods—the substitution of gasoline power for that of the steam engine and the horse. It is the beginning of a great world-wide movement, which will not stop until the horse, from being the most important factor in farming, is relegated to a very inferior position. Nor is that sweeping change long to be deferred. In the days of the stage coach the first locomotive was considered a mere mechanical toy, having no permanent value or interest. Today the stage coach is fast becoming almost a curiosity—thus the world swings forward.

When a farmer, working about thirty horses as Ray Graham was doing on his farms, can see that from a half to two-thirds of his investment in horses will purchase an engine to do his work—an engine that in winter consumes nothing, and requires no attention, that in summer costs less for gasoline than the horses do for feed and that is, in fact, an expense only when actually working, it will not take him long to decide upon a change. Not only this, but the engine will do a far greater amount of work, will do it better and will do it cheaper than can possibly be accomplished by means of the same investment in any other agency for farm traction.

During the last half century of progress, conditions as to farmers have been entirely reversed. Except by low comedians upon the stages of cheap theaters the farmer is no longer pictured as a green citizen whose chief ambition is to raise a great crop of whiskers and who, when he goes to the city wears a linen duster and carries a carpet-bag. Fram being merely a hard-working tiller of the soil the farmer has become a large industrial operator, a broad-guaged man of affairs. Today the proprietor of a large farm is the head of a great enterprise, involving heavy investment of capital and extensive employment of labor. He has a well-equipped office on his farm. Daily his mail is brought to his door by rural carriers, and he transacts business over the long distance telephone with Chicago and other great cities. He is keen in his appreciation of labor saving devices, and in his own way is as much a captain of industry as the more spectacular heads of large interests.

MILWAUKEE WANTS MORE

The Milwaukee board of fire underwriters is so enthusiastic over the success of the salvage truck recently purchased for the insurance patrol that plans are under way to replace all horse-drawn patrols with machines. The motor truck is stationed at No. 1 on Milwaukee street, near Michigan, and although originally intended to cover the east side, it also covers the south side. No. 3 station, Scott and Grove streets, has been abandoned. Two additional motor trucks would be sufficient for the requirements of the entire city.

NEW YORK FALLS IN LINE

New York has decided to buy a motor car fire engine, which will be a combination of steam and gasoline vehicle, which probably will be used in a down town district. The contract for supplying the new engine was passed several days ago by Fire Commissioner Rhinelander Waldo. It is in reality a modification of a contract previously authorized for the delivery of an engine similar in construction to those now in use. The change embraces the construction of motor truck chassis for propelling purposes. The pumping power of the engine will be steam. The authorization of the contract for the combination engine by Commissioner Waldo was based upon his observation of the economy in maintenance shown by the use of a motor car hose tender at present in service in this city. The total cost for operation and repair for this vehicle for the first year was $50. The motor tender carries double the amount of hose held in the old-fashioned horse-drawn tender. Economically, the motor tender is an improvement. It does the work of four horses. The bill for shoeing each of the department horses is $6 a month.

PLOW READY FOR ACTION WITH CREW ON THE JOB

From the

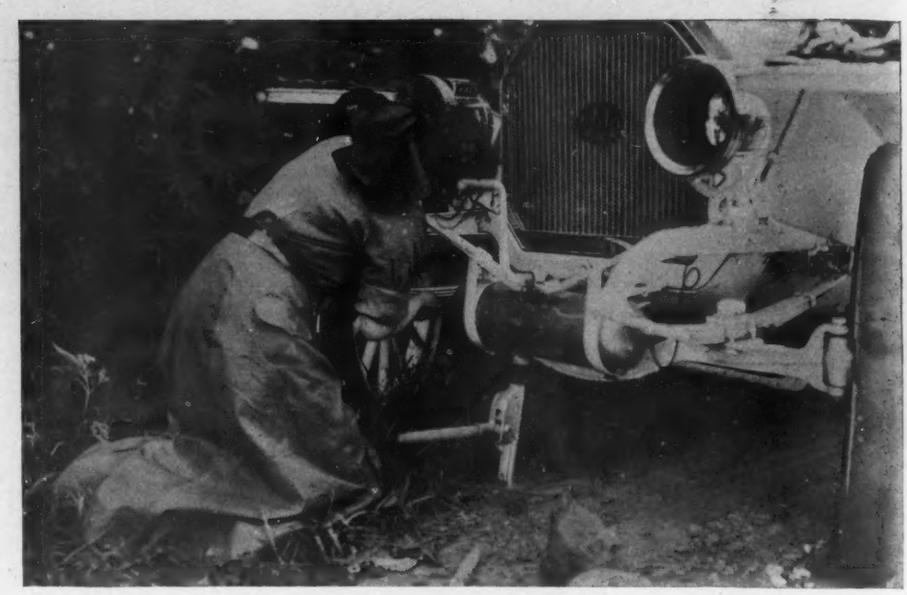
CLUB Building a Lake—The Minneapolis Automobile Club is constructing a lagoon at its club house at Bloomington, so that members may reach the club house from the city via the Minnesota and Mississippi rivers in launches. The distance by river is 25 miles.

Choose Judge for President—Judge George B. Clemenson of Lancaster, Wis., has been elected president of the Southwestern Wisconsin Automobile Club, recently organized by owners in four counties and affiliated with the Wisconsin State A. A. The other officers elected are: Vice-president, Dr. W. Cunningham of Platteville; secretary and treasurer, O. A. Eastman of Platteville. The club now has forty-six members.

Road Work Well Done—Judge W. B. Fellows, state auditor of New Hampshire, announces that so well had James E. French, chairman of the committee of appropriations, handled the finances this year that it will be possible to complete the three big trunk highways without issuing the $200,000 worth of bonds that remained unissued to finance that project. These highways reach out from the mountains to the state borders touching Massachusetts, Maine and the ocean, covering several hundred miles. There is enough money in the treasury also to pay for finishing the state house.

Will Build Oil Macadam Road—The farmers of the Wenatchee valley, Wash., have joined with the Chelan county officials in a movement to build an oil macadam highway the entire length of the valley. The project will be aided by financial support from the state highway funds, the balance necessary to be raised through the creation of an improvement district. The highway will be one of the main connecting links of a great mid-state highway between Spokane and Seattle. Last year a 3-mile stretch of roadway was constructed by the state highway commissioners, and it has proved highly satisfactory. The valley road will traverse a fruit section that is famed throughout the United States.

Triumph for Miss Scott—The first spring trouble that Miss Scott has encountered on her transcontinental trip overland in an Overland came about 10 miles out of Lincoln, Neb. She came suddenly upon a little wooden bridge with one of the planks broken out. A front spring with all but the top leaf broken and that badly bent was the result. Miss Scott says that she has often been asked since she started why the Prest-O-Lite tank was placed between the frame members in front of the radiator. She always has said that it was to economize space, but now she has a brand new reason that is much more practicable. Miss Scott searched up and down the road for a block of wood on which to place the rack but could not find a single piece of wood that was not nailed down excepting the three blocks that she carries and those she needed to block the spring up with after she had raised the frame up to a normal position with the jack. She finally pried out two cakes of hard baked gumbo, which were so hard that she could not break them with her heel. So she used the gas tank instead of a block of wood and made the repair.



MISS SCOTT UTILIZES GAS TANK MAKING SPRING REPAIR

Boon for Tourists—By a special arrangement with the Canadian department of customs members of the Automobile Club of Buffalo can enter Canada at any port on the Niagara frontier and upon presentation of the 1910 membership card will be given a permit to remain in Canada from a period of 7 days free of any bond provided the car is returned in the specified time at the same port at which it entered.

Better Roads for Winnipeg—Good roads, which have been the dream of the traveling public of western Canada for 25 years, and which have been the slogan of the Winnipeg Automobile Club since it was organized 8 years ago, are about to be realized in so far as the province of Manitoba is concerned, at any rate. The movement has been gradually gaining ground ever since the club inaugurated it in earnest, and now it seems to have impressed itself upon every municipality and every municipal officer. The whole situation was discussed in all its phases at a provincial good roads convention held in Winnipeg on May 25, and a program was mapped out for development. The government has appointed A. McGillivray, a civil engineer who has specialized in road construction, to the newly created position of good roads commissioner, and he is rapidly getting down to work on a scheme which within a few years will make the prairie trails the delight of the tourist as well as the ordinary traveler. He is instructing every municipality in the proper methods of draining roads, building them on a uniform scheme, and laying down the precedent that all culverts and bridges should be either of steel or concrete. Another convention will be held in Winnipeg in July.

Meet for Louisville—There will be a track meet held in Louisville Friday and Saturday, July 8 and 9, at Churchill Downs, under the management of Homer C. George and W. H. Wellman. The Louisville program provides eight races daily ranging from 5 to 20 miles. Ray Harroun, Endicott, Edmunds, Dawson and Greiner are among the drivers expected.

One More for Wisconsin—The Door County Automobile Association has been incorporated at Sturgeon Bay, Wis. It will affiliate with the Wisconsin State A. A., the secretary of which body, James T. Drought, having assisted in the organization. Mayor Joseph Wolter of Sturgeon Bay is one of the incorporators and doubtless will be elected president. Others among the incorporators are: J. A. Spaisling, W. S. Reynolds, Henry Fetzer, D. C. Dana, H. E. Dana, Arthur D. Riebolds and William Moeller.

Press Wants Roads—At the annual meeting of the Kentucky Press Association last week, resolutions were adopted urging the enactment of good roads laws by the general assembly. As a rule the papers of the state have been consistent advocates of improved highways. There was no serious amount of newspaper objection to the measures which failed of passage in the recent legislature. The people in general, however, were not familiar with these measures, and that may account in some

Four Winds

MISS SCOTT ON OVERLAND JOURNEY ENCOUNTERS IOWA ROAD-MAKERS

degree for the failure of the legislators to warm up to the proposed laws. The resolution adopted by the organization do not put the case too strongly when they assert the enactment of good roads laws to be the most needed means to the education of the masses and to the development of the material resources of Kentucky.

Brooklyn Buys Tarvia—The largest order that has yet been issued for a bituminous binder for macadam roads has just been given by the authorities of the borough of Brooklyn, Greater New York. It calls for half a million gallons of tarvia to be used during the coming summer on various macadam roadways.

South Bend Election—The South Bend Automobile Club of South Bend, Ind., elected officers as follows: Walter Hager, president; Arthur L. Hubbard, vice-president; Jacob Woolverton, treasurer and A. H. Cushing, secretary. The officers will co-operate with a board of governors to administer the affairs of the club. The board is composed of L. P. Hardy, Edwin Witwer and Dr. George V. Neinstedt. A hill-climb to be held about July 15 was discussed among other questions.

New Club in Oklahoma—With the assistance of members of the Oklahoma Automobile Association who passed through Hobart on the Daily Oklahoman endurance contest, and W. P. M. Stevens, of Kansas City, a member of the contest board of the A. A. A., Kiowa county, Oklahoma, has started a club, which, if the enthusiasm evidenced at the first meeting continues, will be one of the strongest motor organizations of the state. It will affiliate with the state association. The officers of the Kiowa Automobile Club are: Dan Scott, president; Robert Bash, first vice-president; R. A. Harding, second vice-president; Bob Simmons, secretary; John Hyndman, treasurer; Dr. E. F. Dunlap, Hobart, E. A. Stensil, Mountain View, C. H. Griffith, Lone Wolf, Dr. R. M. Bryce, Snyder, Charles Postom, Roosevelt, and J. A. Portwood, Hobart, trustees. The club starts with a membership of fifty-five.

After a Main Artery—Nashville and Memphis motorists have taken up in a very vigorous way a project for a great public road or boulevard from Nashville to Memphis, a distance of about 283 miles. The only way the trip can be made now is over the route followed by the Glidden tour through north Alabama. W. H. Hayley, president of the Planters Oil Co., at Memphis, was in Nashville the past week in the interest of the road. Of the 283 miles, 123 miles already is good road, and 26 miles is being built, leaving 134 miles to be arranged for.

Money for Road Work—The Automobile Club of Pittsburg at a recent meeting appropriated $1,000 to be used by its county roads committee for furthering the work of securing road improvements this summer in western Pennsylvania. The club is working in harmony with County Road Engineer S. D. Foster, who is one of the best friends that the motor interests of the Keystone state ever had. The money appropriated will either be used for prizes to be awarded to road supervisors direct for the best stretches of road made this summer or the committee will make a proposition to the supervisors to put up this $1,000 provided they will raise as much more, the total sum to be spent for actual road expenses. It is planned to center the club's energies on improving two roads leading from Pittsburg to Meadville, Pa. One of these, via Butler, is already a macadamized road most the way. The other, via New Castle, needs much work to make it a good thoroughfare.

Carry Their Own Bonds—Members of the Winona Automobile Association carry cards that correspond in numbering with the numbers of their cars. They are issued by the chief of police of Winona, Minn., and will be accepted in place of bail in the event of the bearer being arrested for violating the speed or other ordinances.

Run for Tennesseans—The newly organized Automobile Club at Nashville has completed plans for its initial run on July 4, and about thirty cars have entered for the run, with prospects that twice that number will make the run. The route goes through Shelbyville, Fayetteville, Petersburg, Lewisburg, Culleoka, Columbiam, Franklin and back to Nashville.

Neenah Enterprising—The Neenah club, a big commercial organization of Neenah, Wis., is about to put into operation a new and novel plan for advertising the city. Five touring cars, decorated with advertising banners, each carrying five hustlers and one good press agent, will be sent through Wisconsin, Illinois, Indiana, Michigan and Minnesota, exploiting the advantages of the city and making an effort to bring new business and new industries to Neenah.

Going On Business Trip—Some 200 members of the Massachusetts real estate exchange have planned a 2 days' motor tour from Boston to Springfield and return for June 28-29 in order to get in touch with the property interests in the Bay state. Many of the members own their own cars and with those supplied by Boston dealers it is expected that about fifty machines will be used. Governor Draper and Mayor Fitzgerald, of Boston, will go along. The party will leave Boston June 28 and go to Springfield, returning next day.

Women Make Non-Stop Run—Frank Adams, manager of the Wentworth Motor Car Co., Mora agent at Cleveland, O., conceived the idea of having a 1000-miles non-motor stop sealed bonnet run with women as drivers, the course to be in and around Cleveland during the day, the car going alternately to Painesville and back, Elyria and back and Akron and back. At night the car was to run around the streets and suburbs of Cleveland. The drivers were Mrs. Frank H. Adams and Miss Leota Mora, 18-year-old daughter of S. H. Mora, of the Mora company. The engine was not to be stopped during the trip; the bonnet and starting crank were sealed up by the secretary of the Cleveland Automobile Club and the car started without tools, tire irons excepted. The run was successfully completed in 43 hours 45 minutes. Miss Mora drove 168 miles in 6 hours and Mrs. Adams 506 miles in 22 hours.

Manufacturers' Communications

FAVORS THE ACCELERATOR

DETROIT, Mich., Editor of Motor Age —In looking over the trade papers, one finds a continual undercurrent of arguments relative to the accelerator control for the throttle. Some are in favor of it, and many are against it. I should like to present the advantage of this construction.

The arguments brought forward against the accelerator are: 1—That it is hard on the motor by applying the power too suddenly. 2—That it is hard on the carbureter. 3—That it makes it impossible to drive the car steadily over rough roads. 4—That it tires the foot. The arguments in favor of this style of control are given below.

First, however, let us take up these objections one at a time. It is hard to see where an instant application of power harms the motor. If the motor is properly constructed and the compression not too high—a medium or low compression being the best accepted practice today—an instant throwing open of the throttle cannot do damage. While the impulse of the gas engine, as many people believe, is like a hammer blow, at the same time there is a cushioning effect of the gases which makes the stroke much stronger than many people think.

As to its being hard on the carbureter, it is hard on the carbureter. That is to say, it requires a better carbureter to get a uniform mixture if the throttle is thrown wide open instantly, or is instantly closed. The carbureters we are using on the Chalmers cars, however, are responding satisfactorily to this test. You can take any of these cars and throw the throttle wide open and the motor will get away without a miss or a skip. I mention our own cars because I know most about them. There are some makes of cars that do not use the accelerator, but a hand-throttle control instead, in which cars the motor will spit back and hestitate before getting away. It would, therefore, seem that an accelerator control is better inasmuch as it compels the car builder to provide a good carbureter.

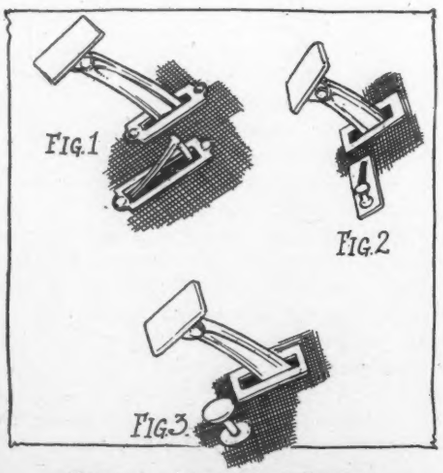
The third objection of course is valid with a push button accelerator, Fig. 3. If, however, a lever accelerator is used, alternating either sidewise, Fig. 2, as on the 1910 Chalmers of fore and aft as on the 1911 models Fig. 1 the foot may be pressed firmly on the floor and there will be no chance of rough roads shaking it up and down on the accelerator.

The objection of tiring the foot is met by the lever accelerator. The type which we use allows the foot to lie flat on the toe board sliding forward and back. One may operate this accelerator by placing the ball of the foot on the middle of it, and cocking the foot sideways. Again in the case of fast work in crowded traffic, the toe may be rested on the highest point of the accelerator, which then can be used as a push button. The possibility of operating this accelerator in several different ways allows one to shift the position of the foot if it tires.

A further advantage of the accelerator is that it does away with the need of a governor. There are some cars which provide an accelerator, a hand throttle and a governor. An accelerator will do everything that a governor will and more. The governor is provided to operate the throttle, so that in going up a hill, the throttle will automatically open and give the car more gas, and going down the hill will automatically close and check the car, so as to hold a uniform speed over varying roads.

This device is very nice so long as no trouble arises. However, with the accelerator constructed so that the foot may be carried on it at all times, the foot automatically will do the same thing as the governor does, for the driver soon learns instinctively to operate the accelerator. While the governor is likely to get out of order, the accelerator is not, and the instinct to operate it is in working order at all times, at least with most people.

When it comes to operating a car in heavy traffic, an accelerator practically is indispensible, that is, if one wishes to drive one's car smoothly and without racing the motor. It is obvious that you cannot operate a car in heavy traffic with a hand lever and do it easily. Further, if one wishes to shift gears properly an accelerator is absolutely essential. When starting up, to shift gears properly, one throws in the first speed, then accelerates rapidly. Just as the clutch is released slow down the motor, slip the gears across, drop in the clutch, accelerate again, repeating the same performance when going into third. By doing this one can shift the gears nicely and get away with a smooth uniform acceleration of the car. In going backwards and shifting from third to second and from second to first, the opposite action is necessary—one should touch up the motor slightly in shifting back. It is obvious that this is impossible with any other control but an accelerator.



TYPES OF ACCELERATOR CONTROL

In this matter of shifting gears it is easily seen that the accelerator is easier on the motor than the hand throttle. For instance, what can be harder than shifting gears without an accelerator control? You set the throttle so there is no danger of stalling the motor, you release the clutch, the motor accelerates rapidly while you are shifting the gears, and when you drop in the clutch the motor is suddenly checked down to the speed of the car. You then shift into third and this performance is repeated, and again as you have a fourth speed. With the accelerator as explained above, all this strain is avoided. The accelerator control does away with this.

The use of an accelerator is much easier on tires than any other form of control. With an accelerator one is able to start up the car without jerking or vibration in passing from one speed to another. An uneven control, as is well known, causes a jerking of the car which is communicated to the tires, working the fabric back and forth and gradually weakening it. Some may consider this a small point. There is little doubt, however, that the constant working of the layers of the fabric one on the other is hard on the tires, that many a blow-out has been due to the tires having been subjected to this kind of strain. Thus we see that all objections to an accelerator can be met, if the proper accelerator and carbureter are provided. In addition the accelerator has several distinct advantages over all other methods of control, resulting in easier, smoother and more economical operation of the car.—G. W. Dunham, Consulting Engineer, Chalmers Motor Co.

TELLS ABOUT VULCANIZING

Chicago—Editor Motor Age—Noticing in the issue of June 23 an inquiry from a motorist in Winnipeg, Canada, asking where he can get a book on vulcanizing tires, we beg to state that the Fisk Rubber Co., has such a pamphlet which it will be glad to send to users upon request. This book is entitled "The Repair Shop" and in addition to telling how to vulcanize tires gives ideas on making other repairs.—Fisk Rubber Co., Claude Platt, Manager Chicago Branch.

Legal Lights and Side Lights

SWANN LAW NOW IN FORCE

ALL THE provisions of the Swann motor vehicle law, recently passed by the Maryland legislature, will go into effect Friday. All chauffeurs' licenses and certificates of registration under the old law will have to be exchanged for operator's licenses under the new law. All the motor car records heretofore kept by the secretary of state will be turned over to Commissioner of Motor Vehicles John E. George, whose office in the Union Trust building has been besieged by motorists all during June who have made applications for licenses under the new law. The fees and speed provisions of the new law are the ones that interest the motorists more than any others. The following fees must be paid for licenses to operate in this state:

Class A—Six dollars per annum for each motor vehicle with a rating of 20 horsepower or less; $12 for one with a rating of more than 20 and under 40, and $18 for one with a rating of more than 40 horsepower.

Class B—Three dollars a year for each certificate of registration of a motor vehicle used only for transportation of merchandise.

Class C—One dollar and 80 cents a year for each certificate of registration for a motor cycle.

Class D—Twenty-four dollars a year for each certificate assigning a general distinguishing number or marks to a manufacturer or dealer in motor vehicles other than motor cycles.

The rate of speed must not exceed 12 miles an hour in the thickly settled or business section of cities, etc.; 18 miles in the outlying districts or more than 25 miles in the open country. Only such horns for warning signals can be used as are operated by hand pressure.

AFTER THE MAIL CARRIERS

An ultimatum has been issued to the postal authorities at Indianapolis by James A. Collins, judge of the police court of that city, that speed violations by mail motor cars must cease or the drivers will be sent to the workhouse. Some time ago one of the drivers was arrested and said in court that the schedule arranged by the postoffice authorities was such that law violations were necessary to maintain it. The postoffice authorities denied this and the driver was fined. A few days ago Orville Rynerson, another driver, was arrested. Judge Collins fined him $10 and costs and stated that the next postoffice driver brought into court would be sent to the workhouse.

JUST ONE MORE

An ordinance affecting Buffalo motorists was recently introduced in the board of aldermen of that city by Alderman Weimar. The ordinance prohibits the use of horns or bells emitting "unusual or startling sounds." It also calls for the muffling of the sound of motor explosions, and provides that there must be two lighted lamps in front of each car and one red light in the rear so placed as to shine clearly on the number plate. A speed limit varying according to location is prescribed. Any violation of the ordinance is to be deemed disorderly conduct and the penalty of $50 may be recovered in a civil action or be imposed upon conviction in any court of criminal jurisdiction. It is proposed to go into effect August 1, 1910.

CHANGES IN BAY STATE LAW

The members of the Massachusetts legislature have packed up their things and gone home satisfied with themselves, and as a legacy they have left a few changes in the motor law which some of them really believe are meritorious. Yet when the work of this year's legislature is analyzed there is not much of which the members may feel proud. They wiped out the section requiring chauffeurs to carry badges. They very considerately allowed the figures used on the rear to be elevated 48 inches from the ground instead of 36 if an owner cares to have them that high. When it came to putting in a reciprocity clause that would mean real reciprocity as advocated by the Boston Automobile Dealers' Association and others interested in motoring, they did just the reverse, so that now it matters not how many days another state allows Massachusetts motorists to use its roads, the visitor from outside only has 10 days in any one calendar year to operate in the Bay state, while those states that have restrictions will find their motorists restricted to less than that number to correspond to the days allowed others in the state they come from. Another piece of legislation was the changing of the clause relative to sounding the horn at crossroads. The legislators provided that out in the country on passing a corner where the view was not obstructed the horn need not be blown. But in the cities it provides that they still be blown, but that no bell, horn or other device for signalling shall be so sounded as to make a harsh, objectionable or unreasonable noise. Nor shall any driver permit an unreasonable amount of smoke to escape; nor shall any driver make any unnecessary noise by cutting out the muffler or otherwise. Owners of cars equipped with big horns may find themselves arrested for giving a signal, as the law says must be done, if they use such horns, or arrested for not blowing them. Another gem of consistency was afforded by the bill to give 20 per cent of the motor revenue to small towns when it was apparently agreed that all this money should be spent on state highways. The taxation fees also may be increased. The changes go into effect July 10.

NEW WAY OF PESTERING

The alert country constables have discovered a new method of annoying St. Louis motorists who drive beyond the city limits. Armed with a numerical and alphabetical list of all cars registered in Missouri, the St. Louis county constables and deputy sheriffs are taking advantage of a peculiar technicality of the Missouri statutes. As interpreted by the county officers, the law provides that the registration and license must apply to the particular car for which they were obtained originally, and not to another car with which the owner may have substituted for his old one. Although it is not believed this interpretation would hold in a test, still the situation is annoying. It is reported that several counties have shown activity since the St. Louis county officials pointed the way. In this state a $5 fee buys a perpetual license.

CALLAN BILL DECISION

Attorney General O'Malley, of New York state, whose home is in Buffalo, has expressed the official opinion that under the Callan motor vehicle law of New York state owners of motor cars will be entitled to exemption in the current year for taxes on such vehicles, as personal property. This opinion settles a large number of disputes which have arisen all over the state between motor car owners and local assessors regarding the right of the latter to assess motor cars on their tax rolls for the current year.

GIVES HAIR-LINE DECISION

Attorney General Denman, of Ohio, recently gave out an opinion relative to the proper lighting of motor cars at night. There has been some diversity of opinion as to whether the three lights, two on the front and one on the rear of motor vehicles, are necessary in case a car is left standing at the curb. The difference of opinion hinged on the word operated used in the section, some contending that a car standing at the curb could not be said to be in operation. In his recent opinion the attorney general said: "In section 12, it is my opinion that the word means used within the broadest significance of that word. Any motor car upon the public highway would, in my opinion, be regarded as being in use and hence as being operated within the meaning of section 12. It is, therefore, my opinion that the requirements of that section as to lights during the night apply in case a motor vehicle was left standing in the road."

NEW MOTOR IDEAS BROUGHT OUT BY FRENCH

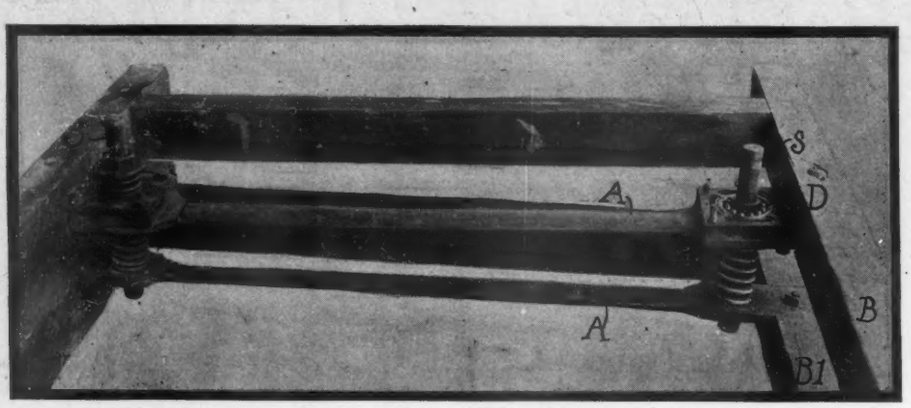


FIG. 1—PERREAU SHOCK ABSORBER DESIGN

PERREAU SHOCK ABSORBER

IN eliminating shock, the tendency has rightly been to place the anti-jolt device between the road wheels and the frame of the car, for in this position both the passengers and the machinery are benefited. Attempts to give a special suspension to the body only have not been very successful, the few really satisfactory devices so changing the external appearance of the car, or so modifying lines of construction that makers have hesitated to adopt them, in spite of the undoubted improvement which they afford.

The Perreau shock absorber has not fallen into this error, the apparatus being capable of being fitted to any chassis and body without modification and without any change in its external appearance. It interposes a system of springs between the two, thus relieving the body of many of the jolts and all the vibration which the chassis springs and shock absorbers fail to absorb. The apparatus consists of two transverse steel bars A, Fig. 1—the lower one of which is bolted to the frame member B1 of the car, and the upper one to the body frame B. Connecting them are two case-hardened steel spindles S fixed to the lower transverse bar, and passing through a ball bearing D on the upper one. Thus, the upper bar, with the body of the car attached to it, has an up-and-down movement on the spindle, without any possibility of wedging, by reason of the ball mounting. The movement is restricted by suitable coil springs on the spindles, the down stroke by a spring between the lower bar and the housing of the ball bearings, and the up stroke by a spring maintained in compression against the ball bearing housing and a lock nut. Length and strength of the springs are calculated according to the weight to be carried.

A very slight lateral movement is provided for by interposing a coil spring around the ball race and its housing in the upper transverse bar. In the illustration Fig. 2—four double S springs C, are shown, but the same result, with a lower manufacturing cost, can be obtained with a simple coil spring. This not only prevents wedging on the spindles, but allows the two sides of the car to work independently, it being rarely indeed that the same deformation takes place at each side of the car. Within certain limits this tends to keep the body horizontal when road inequalities cause an inclination of the chassis. Practical tests show that the spring mounting of the body has the advantage of absorbing the vibration which is set up on nearly all cars at very high engine speed.

FRENCH VALVE OPERATION

The manner of operating eight valves by means of four cams, on the four-cylinder Sizaire-Naudin light car, recently described in Motor Age is shown in Fig. 3 For the sake of simplicity many of the structural details have been omitted, while the artist has taken liberties with other parts; this, however, only tends to make the principle clearer. The camshaft C, carried in ball bearings, has four cams, like one shown, operating the exhaust valve EV from below in the usual manner. The intake valve is immediately above the exhaust and is operated by means of overhead rocker R, each rocker being carried in a kind of link, a yoked standard or Y-shaped support, as shown in the sketch. Parallel with the camshaft, and only about 1 inch from it, is a fixed spindle S on which are mounted four small rockers A,

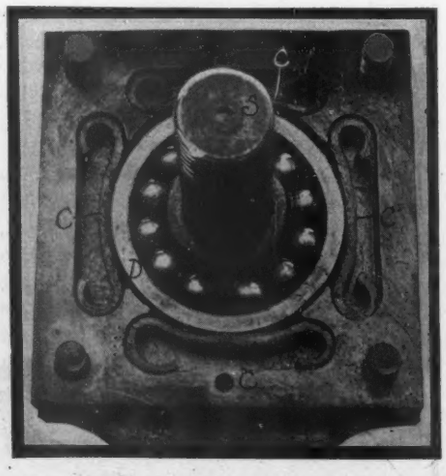


FIG. 2—PERREAU SHOCK ABSORBER BEARING

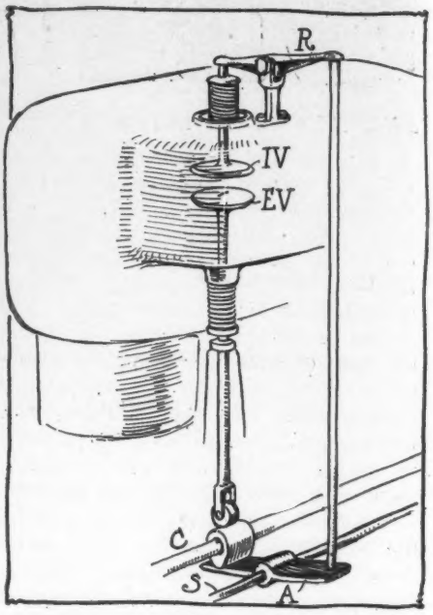


FIG. 3—VALVE ACTUATION IN SIZAIRE-NAUDIN

the extremity of each one being kept in contact with the face of its cam by means of a spring pressing against the underface and resting on the edge of the crank-chamber. When the underneath rocker is depressed by means of the cam, the opposite end is of course raised, and through the intermediary of the tappet and the vertical push rod the overhead rocker arm is tipped up, causing the opening of the intake valve. This type of mechanism allows the use of larger valve areas than would be possible were intakes and exhausts placed side by side. The cylinders have a diameter of 70 millimeters—or 2.75 inches—and the diameter of the valves is 50 millimeters—or 1.96 inch.

FLOATLESS CARBURETER

To reduce weight and at the same time remove complication, Anzani has modified a carbureter of his own design to be used without a float, and in this condition employs it on his five-cylinder aviation motor. The apparatus is a simple structure consisting of a cast aluminum choke tube T, Fig. 4, mounted on an aluminum saucer C, on the center of which, and within the tube, is a vertical nozzle. The base of the tube, carried within the saucer, has four openings, 1, 2, 3 and 4, Fig. 5—through which air is admitted. The supply of gasoline is regulated by means of a needle valve V, capable of shutting off the flow completely, or opening until the full diameter of the gasoline pipe is free.

On starting up, the gasoline is allowed to overflow at the nozzle until a quantity is standing in the saucer. As the air must pass over this to enter the choke tube of the carbureter, a very rich mixture naturally is obtained. The flow of gasoline then is regulated until the motor is running without any overflow into the saucer.

In the illustration the method of control is shown by a hand-operated screw, but when used this is arranged to be operated by flexible wire control. There is no additional air supply of any kind, and no other means of control except that of increasing or decreasing the flow of gasoline to the nozzle. Admittedly the device has not all the flexibility that could be demanded for car work, but for aeroplane motors, generally required to run at a fixed speed, the carbureter gives satisfaction. Its total weight is only a little over ½ pound.

COMPARES TRADE CONDITIONS

Speaking of the respective records of the United States and Europe, a French engineer who has been in the United States 2 years and also knows conditions as they exist in most of the European car producing centers, said recently: "Just as mad as we Frenchmen were for road races in the early days, by which I refer to the Paris-Berlin, Paris-Vienna and Paris-Madrid times, just as mad are the Americans for pleasure motor cars. Everyone in America wants a motor car, whether he knows how to run it or not, whether he knows anything at all about a car or not. I think, from what I have seen, that in not more than four or five plants a car is tested more than a day. This is something you will not hear of in Europe, especially in France. In our big, and a good many small, factories a car is considered perfect only after it has been tried for at least 2 weeks on the roads, upon hills and level stretches, in bad weather and good weather.

"I will say further that the time surely will come when the American makers will have to look for the European markets to dispose of their surplus. They will have to do better than they now are doing, as with a few exceptions the American car has a bad reputation here and elsewhere in Europe. My advice will be that the makers across the Atlantic renounce to the quantity aspiration and rather make it quality. Fewer cars perfect will sell better and do them more good than more cars imperfect.

"What impressed me most with regard to the industry in America was the rapidity with which plants were being extended, enlarged. It seems as if in the United States a manager or president of a concern may decide in a moment's time if a plant is to be made larger, how much is to be spent for the work, in how many hours it is to be finished. How different from the old European customs where it sometimes takes a year before a decision to spend $5,000 to enlarge a plant is taken. Here we must go through all kinds of red tape, as you call it, get a meeting of stockholders, have the proposition laid down, then often a reporter or a man to make a special report is appointed and then you wait till another meeting of stockholders is called and then sometimes there is another long discussion until finally the permission is obtained from those interested. Then

FIG. 4—ANZANI FLOATLESS CARBURETER

the work begins and takes another half a year before it is completed.

"Here in Europe we don't go about in money matters like in America. Dollars seem to be centimes or cents with the American business men. They decide to expend $100,000 with as much haste as we do to expend 10 francs or $2. They seem to me like some nervy gamblers who take a chance on something that is worth while taking a chance. We in Europe, in general, do not like to take chances, do not want to gamble except where it is a sure thing. That is why so many motor car concerns have for many years found it so difficult to obtain sufficient funds from banks. Even now a great many financiers refuse their aid to motor car undertakings.

"Another reason why it is not surprising that the motor car is making greater headway in America than in Europe is the fact that the clubs have done and are doing much more to encourage the movement than they do in Europe. The trade associations, and the various agents or dealers' associations have done much also to popularize the motor car. But in my estimation the greatest credit of all is due to the daily papers and the special trade publications. You do not find in Europe, excepting Great Britain, any country where the press gives as much space if any at all to motor car news as America."

MOTOR CAR LITERATURE

"A Book of Wonderful Tales" is a dainty little brochure from the Rapid Motor Vehicle Co., Pontiac, Mich., which it is circulating in the interest of its trucks. This little volume, dainty in its white cover, with blue and gilt decorations, appears more like a little gift book than an advertising medium, devoid as it is of any advertising on the front cover page. The tales, of which there are fourteen, on the once-upon-a-time order, tell of the woes of the farmer, the furniture dealer, the cotton planter, the tourist, etc., until a Rapid vehicle was purchased, when "they lived happily ever afterwards." Each page story is alternated with a full-page illustration.

The Motor Car Supply Co. has issued its 1910 catalog, No. 18, which lists in its 342 pages a full line of motor car specialties, including such articles as shock absorbers, speedometers, ignition apparatus, tools, tires, rims, horns, lamps, tanks, paints and brushes, clothing, and many other accessories.

The Warner Instrument Co., Beloit, Wis., has issued a series of twelve photogravures of well-known racing drivers—Louis Chevrolet, Ray W. Harroun, Louis Basle, George H. Robertson, L. A. Mitchell, J. M. Matson, Lewis Strang, H. M. Stillman, Charles Basle, Charles Merz, Hugh N. Harding and Harry F. Grant. These photogravures are 8½ by 11 size, and in the lower left-hand corner is featured the Warner autometer.

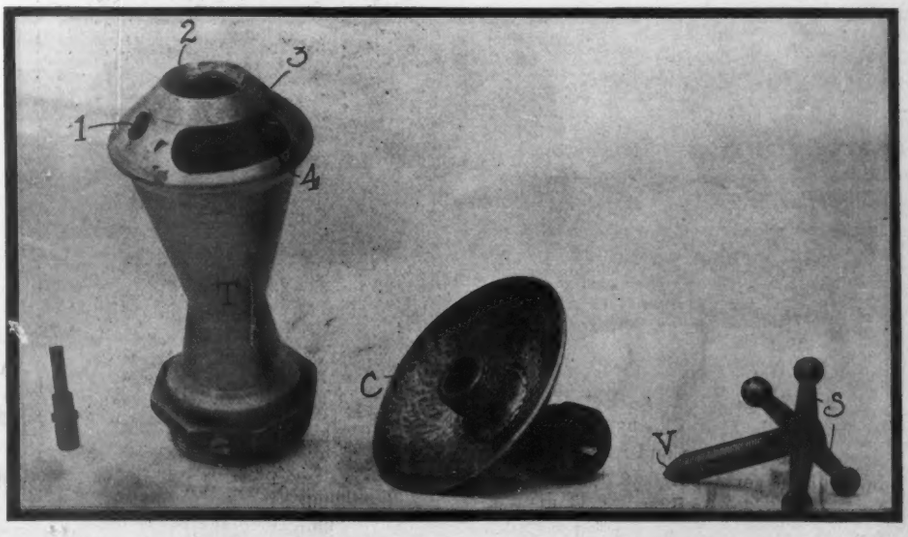


FIG. 5—DESIGN OF ANZANI FLOATLESS CARBURETER

Among the Makers

BLACK Crow Progress — The Crow Motor Car Co., at Elkhart, Ind., is turning out thirty cars a week now, and needs room.

Sold Out For 1910—The Car Makers' Selling Co., 1256 Michigan avenue, Chicago, announces that no additional orders will be accepted for 1910 de Tamble cars which this concern represents.

Mitchell Output Increases—The Mitchell-Lewis Motor Co., of Racine Wis., will build more cars for 1910 delivery than originally intended. About thirty-five cars are being turned out every day and the plant will run all summer.

Barker, Life Insurance Man—Frederick A. Barker, former general sales manager of the Willys-Overland Co., at Toledo, and who resigned from the concern recently, in an open announcement states that he will devote his time to the upbuilding of the Great Northern Life Insurance Co., of which he is president. The company was incorporated under the laws of Ohio, April 25, 1910, with an authorized capital stock of $500,000.

Detroit Daily Outputs—For the week of June 11, the Hupp Motor Car Co. had an output of 190 cars. The following week, this total was raised to 200 cars, at which figure it will be maintained until the 1910 allotment is finished and shipped. At the Ford Motor Co.'s works, shipments now aggregate 160 cars a day. Since the first of the year, this company has utilized 2,257 freight cars in shipping its product, the number of cars shipped therein being 11,966, an average of five machines per freight car.

Improving Elmore Plant—The General Motors Co. will make extensive improvements on the Elmore factory at Clyde, O. A new machinery building 200 feet wide and 250 feet long will be erected, making the main factory structure 660 by 300 feet. A move intended to take care of the labor situation was the purchase of three farms comprising 160 acres of land adjacent to the plant. The land will be platted and sold to employees at a nominal price. A company will be organized to take care of the erection of residences on these lots, permitting the owners to pay for them outright or on the installment plan.

Looks Into the Future—Six months ago the men who are responsible for the growth of the Overland company foresaw the increase in business and prepared for it. At that time they purchased $60,000 worth of machinery to be used in the motor department at Indianapolis. This was long before they knew where they would install it. When a site was procured they did not have to wait then upon the delivery of the machinery. At present a large army of workmen is busy constructing one of the finest re-enforced concrete buildings in the Hoosier capitol. Not one stick of wood will be used in this building. There will be three stories and the capacity of the motor department, which now employs 1,000 men, will be doubled. The new building will have more than 50,000 square feet of floor space. It is expected to occupy this new home within 3 weeks. This new building is only one of a series the Overland company will build.

PLANT OF THE SOUTHERN MOTOR WORKS AT NASHVILLE, TENN.

Overland on the Job—An Indianapolis real estate company, to draw attention to an addition it was about to open, advertised for an employer generous enough to start a young man and woman in his employ in married life by presenting them with a building lot in the addition. The Overland Automobile Co. quickly responded, selecting one of the best lots in the addition. Two Overland employes were married on the lot Sunday afternoon, June 26, Mayor Shank performing the ceremony. The Overland factory band played the wedding music, and later gave a concert. Will H. Brown, vice-president of the company, handed the couple a deed to the lot after the ceremony had been performed.

HARTFORD SUSPENSION CHICAGO BRANCH

La Crosse Starts In—The National Gauge and Register Co., of Minneapolis, Minn., has moved its plant to LaCrosse, Wis., being the first concern to be attracted to LaCrosse by the new industrial association. The concern manufactures eight motor car accessories and specialties, the invention of Edmond E. Hans, vice-president.

Matthews in Control—George A. Matthews, active head of the Jackson Automobile Co., of Jackson, Mich., has purchased the entire interests of Charles Lewis and F. L. Holmes, and Mr. Matthews and his three sons, Frederick C., Harry E. and Howard A., are now the sole owners. Mr. Holmes will remain with the company. Mr. Matthews also has sold his interest in the Clark Motor Co., and the Lewis Spring and Axle Co., to Mr. Lewis. John Mark will continue as superintendent of the Jackson company and there will be no change in the policy or administration. The company now employs between 500 and 600 men.

Two More for Detroit—Two more new companies are announced in Detroit. These are the Howse Commercial Car Co., and the Globe Motor Car Co. The latter, of which Robert S. Millhollin is the principal stockholder, is capitalized at $50,000, and will build pleasure cars, starting in at once. The Howse company is capitalized at $60,000, and has the following stockholders: August J. Steiber, Charles F. Howse, Edward P. Newton, Frank P. Mullin, and Albert McClatchey. This company will build pleasure and commercial cars. The articles of incorporation also state that parts and accessories will be manufactured. At the same time the ranks of the accessory makers were increased by the addition of the Huron Radiator Co., cap-

and Dealers

NEW OVERLAND MOTOR PLANT BEING BUILT AT INDIANAPOLIS

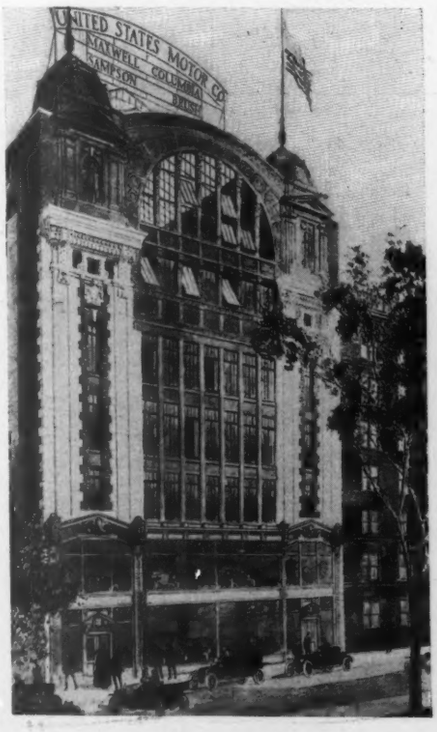
italized at $100,000 to build radiators and allied products. The men interested in this new concern are: L. C. Moore, John A. Stewart, Mark W. Allen, Malcolm T. Faulkner, Fred Heiden, W. O. Peck, and F. E. Harvey.

Going Around the World—Charles E. J. Lang, of the Rauch & Lang Carriage Co., left on Thursday for a tour around the world, combining business with pleasure. He will visit practically all the larger cities of the world, and incidentally open up markets for the electric car made by the firm.

Opens Branch in Detroit—The Hartford Auto Parts Co., Hartford, Conn., is opening a branch office in Detroit, Mich., in order to be more closely in touch with their western trade. This concern has added a complete line of cone clutches to its product during the past year. F. L. Martin, secretary and sales manager, will be in charge of the office for the next 2 or 3 months with temporary head-quarters at the Pontchartrain hotel.

Ramblers' 1911 Output—The 1911 production of the Thomas B. Jeffery Co., Kenosha, Wis., will be 2,500 cars, according to an announcement just made at the Rambler works. The number is practically the same as in 1910. The Thomas B. Jeffery Co. was incorporated last week with a capital stock of $3,000,000. Charles T. Jeffery, one of the principal stockholders and son of Thomas B. Jeffery, founder of the Rambler works, said: "Previous to the death of Mr. Jeffery, the business of this company had been operated as a co-partnership by Mr. Jeffery and his sons. Legally Mr. Jeffery was the owner of the entire property. It became necessary to incorporate to properly conduct the business. The stock will be held by the heirs of Thomas B. Jeffery. The change in the company will not make any change in the business. The company intends to carry out all of Mr. Jeffery's cherished plans for the extension of the great plant and several large buildings are now under construction. Others will be started before the end of this year." Officers are about to be elected by the company.

Big Plant at Nashville—The Southern Motor Works of Nashville, Tenn., maker of the Marathon car, has more than 100,000 square feet of floor space. The location of its plant is near the heart of the city on the tracks of the Nashville Terminal Co., which is a combination of all the railroads entering this city. The plant is being improved and equipped with the latest machinery. It will be run by a system of separate electric motors and every modern convenience for the rapid and accurate production of Marathon cars.



NEW YORK BUILDING OF U. S. M. CO.

The output at this plant during 1911 will be approximately 2,000 cars. The capacity at Jackson is about 400 cars per annum. The company will build its cars complete in every detail. Every part will be manufactured at the Nashville plant.

Horn Company Moves—The Lovell-McConnell Mfg. Co., maker of Klaxon horns, now is located in its new factory on Wright and Emmet streets, Newark, N. J., where it has available 40,000 square feet.

Small Fire at Buffalo—Several finished taxicab bodies and tops owned by E. R. Thomas Motor Co., were destroyed by fire Monday. The loss on the building and stock will go close to $10,000. The building was used as shipping room and was located a long distance from the main plant.

Visit Lima Plant—Between 600 and 700 employees of the Gramm-Logan Motor Car Co., of Bowling Green, visited the Lima plant last Sunday, special cars being provided for the occasion. The trip was planned by the officers of the company. It is expected that the big Lima plant which will employ about 700 men will be ready for occupancy about September 1.

First Sod is Turned—Amid a blast of whistles and music by the band the first sod was turned for the excavation for the new $100,000 plant of the Gaylord Motor Car Co., at Gaylord, Mich., by President A. B. Comstock of the company. The company has purchased a site of 40 acres extending along the line of the Michigan Central railroad upon which to erect three buildings each 50 by 200 feet. It is expected that all of the buildings will be completed by next winter.

New Plant About Ready—The Wisconsin Auto Co., an auxiliary of the Wisconsin Carriage Co., which manufactures the Wisco car at Janesville, will soon occupy its own plant, the business having grown to such proportions that the present quarters in the carriage plant are too small. The company will occupy the former plant of the Janesville Cement Post Co. The capital will be increased to $120,000 at once and all of Janesville's substantial business men will be interested.

Merger at South Bend—The Clover Leaf Machine Co., of South Bend, Ind., manufacturer of concrete block machinery with a factory in the Manufactures' Plant and Power Co.'s buildings, and the Yuster Axle and Transmission Co., South Franklin street, have been merged under the firm name of the Clover Leaf Machine and Axle Co. The proprietors will embark in the manufacture of motor car axles on an extensive scale. The capital stock of the company is $100,000. In the articles of incorporation filed with the county recorder the following are named as incorporators: Maurice L. Yuster, Arthur E. Wile, William O. Williams, Kersey C. DeRhodes, Joseph C. Paxton, Harry H. Keller and Frank E. Whitehall.

Brief Business

EDGERTON, Wis.—Paul Watson has opened a new garage at Edgerton.

Baraboo, Wis.—Ray Sherman and W. Stackhouse are erecting a garage on Fourth street and will obtain several district agencies.

North Platte, Neb.—Davis & Chorpenning of North Platte have begun the addition of an addition to their garage, 50 by 85 feet, on East Fifth street. Construction will be of cement block.

Omaha, Neb.—Fred C. Borden has engaged in business in Omaha under the firm name of the American Tire Repair Co. at 2129 Farnam street. He will carry a line of tires and do a general tire repair business.

San Antonio, Texas—A site has been secured for the factory of the Commercial Motor Car Co., at San Antonio for the manufacture of motor trucks and the work of starting the factory will begin at once. The company is capitalized at $100,000.

Los Angeles, Cal.—Plans are being prepared by Arthur S. Heineman for two new garages of brick construction to be erected on Olive street, to cost $55,000. Each will be two stories in height, 50 by 150, and faced with glazed pressed brick.

Worcester, Mass.—The R. H. Higgins Co. has opened an office and salesroom at 96 Commercial street, showing the Stearns, for which it has been made Worcester county representative. The new company consists of Ralph H. Higgins and Willard E. Higgins.

Chicago—Harry W. Doherty, sales manager of the Car Makers Selling Co., distributor of DeTamble and Anhut motor cars and Dart delivery wagons, has gone to the coast to establish a distributing company to handle the states of California, Oregon, Washington, Idaho and Nevada, with branches in Los Angeles, San Francisco and Seattle.

Greenwich, Conn.—The Meanus Motor Works Co. has increased its capital from $100,000 to $300,000.

Omaha, Neb.—A. K. Chambers and W. B. Jennings have entered the tire repair business under the firm name of the Ideal Tire Repair Co. at 2124 Farnam street.

Two Rivers, Wis.—William Wagner and Frank Lamach of this city have organized the Jefferson Auto Supply Co. and will open a garage, repair shop and supply store at Jefferson, Wis., on July 1.

Cincinnati, O.—The Cincinnati Taxicab Co. has been incorporated with a capital of $20,000 to operate a taxicab service and do a general garage business. The incorporators are Frank E. Burnett, Allen Marshall, Charles E. Everett, George B. Johnson and Alexander Skyes.

Philadelphia, Pa.—The Regal now is being handled in the Quaker city through a branch. The Philadelphia Regal Auto Co. having succeeded the former agent, the Thomas M. Twining Co., at the same address, 330 North Broad street. R. M. MacCormack, formerly sales manager of the agency, will manage the new branch.

Minneapolis, Minn.—The new home of the White in Minneapolis, is at 609 Tenth street, south. The building is constructed of brick, having a frontage of 50 feet and a depth of 130 feet. It is two stories and a full cement basement, with no posts on the first floor. The upper floor is to be used as a repair shop and large stock-room; the first floor, show room and garage; the basement for storage. The building was erected at a cost of about $35,000.

Sheboygan, Wis.—The Erie garage, North Ninth street, is being enlarged. The adjoining building, 66 by 50 feet, has been added, making it the largest garage in Sheboygan. H. E. Smith is manager of the business.

New York—T. W. Goodridge has joined the forces of the Matheson Automobile Co. His first duties will be to establish agencies for the Matheson line of cars from Pittsburg to the coast. F. J. Manning, formerly connected with the Warner Speedometer Co., also has joined the Matheson company as a salesman in the New York district.

Newark, N. J.—The Hyatt Roller Bearing Co. contemplates building another factory. The new structure will be located at Fifth and Middlesex streets, to cost about $24,000. The company has now in course of erection, a five-story brick building which was started some weeks ago and it is expected, in a day or so, to have plans for another large factory filed. This is to be built at Berger and First streets.

Atlanta, Ga.—Business changes continue in Atlanta's motor colony. A new company has been formed in Northcutt, Smith & Co. This firm will handle Chalmers cars for northern Georgia, Hudsons for northern and middle Georgia and Pierce-Arrows for most of Georgia and some of Tenneesee. A garage has been secured on Auburn avenue. The Packard, handled for several years by Steinhauer & Wight, has been transferred to a new concern, the Owners Motor Co. Peachtree street show rooms have been secured. The Howard

GARAGE OF C. A. MILLER & CO. AT SPRING VALLEY, ILL.

Recent Incorporations

Buffalo, N. Y.—Clark Motor Co., capital stock $50,000; to manufacture motor cars, motors, engines, etc.; incorporators, Stanley B. DeLong, John W. Van Allen and Henry J. Rente.

New York—Anthony Auto Body Co., capital stock $10,000; to manufacture and deal in auto bodies, etc.; incorporators, Louis Greenfeld, Anthony Yandrasitch and Philip Greenfield.

New York—Keep-Step Motor Co., capital stock $10,000; to manufacture and deal in electrical motors, generators, rectifiers, etc.; incorporators, Ernest E. Wheeler, Tristan B. Johnson and Walter H. Wheeler.

New York—Garage Owners' Association of New York, capital stock $5,000; to maintain a mercantile and collection agency for owners of garages, etc.; incorporators, Austin P. Palmer, Irwin D. Siegel and G. Dudley Carleton.

New York—Auto Trunk Rack Mfg. Co., capital stock $900; to manufacture and deal in motor car trunk racks, accessories, etc.; incorporators, Hyman Goodstein, Charles Goodstein and Benj. J. Laxer.

Binghamton, N. Y.—Binghamton Taxicab Co., capital stock $5,000; to carry on a general motor car and transit business; incorporators, E. V. Dunn, Anna L. Dunn and W. O. Boughton.

Announcements

Motor Car Co., at 38 Auburn avenue, has been appointed state agent for the Parry.

Cleveland, O.—The Auto Body and Top Co. has been incorporated with a capital stock of $25,000 to manufacture and sell motor cars and parts and accessories. The incorporators were Guy W. Patterson, Emmett P. Dowling, C. C. Warden, G. F. Malloby, and F. S. Hammer.

On the Firing Line—The Grant-Lees Machine Co., of Cleveland, manufacturer of helical timing gears, transmissions, steering gears and differentials, have opened a branch sales office at 1001 Ford building, Detroit, to facilitate the handling of its business in that territory. This office will be under the immediate supervision of Ernest L. Smith, the sales manager of the company.

Hartford, Conn.—The Pope Mfg. Co., has declared a dividend of 2½ per cent on the common stock of the company and hereafter a 1½ quarterly dividend on the preferred stock. Both dividends are payable July 30. This is the initial dividend on the common stock of the reorganized company. The common stock of the company is selling close to $75 per share, while the preferred is about $80 per share.

Warsaw, Ind.—A deal has just been consummated by which Earl W. Conrad, owner of the Conrad Wagon Works and Conrad garage, becomes the owner of the building immediately west of the Conrad place of business on Center street and known as the Ripply livery. The building is of brick, two stories high and is 44 feet wide and 132 feet deep. Mr. Conrad will continue his repair shop in its present quarters, which is also used as a garage, and the new addition will be used as a salesroom and garage combined.

Milwaukee, Wis.—The Variable Speed Clutch Co. has changed its name to Variable Speed Transmission Co.

Chippewa Falls, Wis.—The Chippewa Valley Auto Co. will occupy its new garage on River street within 2 weeks. The concern distributes the Rambler and Ford.

Dayton, O.—The Seeing Dayton Co. has been incorporated with a capital stock of $10,000 to operate a sightseeing service in this city. The incorporators were D. A. Eagle, Paul W. Smith, G. H. Holton, C. P. Watson and V. E. Wampler.

Columbus, O.—The Standard Auto Sales Co., of Youngstown, O., has been incorporated with a capital of $10,000 to operate a garage and deal in parts. The incorporators are Randall G. Anderson, A. Powers Smith, W. H. Anderson, J. H. Euwer and W. D. Euwer.

Boston, Mass.—George L. Osborne has been appointed sales manager of the Boston branch of the Peerless company, while H. C. Mayo has been placed in charge of the outside business in New England. Manager John L. Snow announces that the new building for the branch will be ready for occupancy about August 1.

Washington, D. C.—The business of the L. P. Dorsett Co. has been formally transferred to the Carpenter Automobile Co. and will hereafter be under the management of A. D. Carpenter, president and general manager; W. R. Carpenter, vice-president; N. F. Carpenter, secretary and treasurer. The company is located at Seventeenth and U streets, and will continue to handle the Stoddard-Dayton, Empire, Kline and Babcock.

Columbus, O.—Selig Brothers have opened a repair shop and accessory business at 1044 East Main street.

Wilmington, Del.—The Foss-Hughes Motor Car Co., which handles the Pierce-Arrow, is occupying a new garage here, with Frank A. Alderman in charge. One hundred cars can be taken care of.

Oshkosh, Wis.—Conrad Koenig, proprietor of the Wisconsin Tire Repair Co., has filed a voluntary petition in bankruptcy. The liabilities are scheduled at $4,774.15 and the assets at $3,569.72.

New York.—Plans have been filed for the George Ehret Automobile Industry building which will be two stories high and located on Broadway, between Fifty-eighth and Fifty-ninth streets, to cost $120,000.

Omaha, Neb.—The E. W. Reynolds Top Mfg. Co. has moved into its new building at 709-711 South Fifteenth street. The building is constructed of brick, is 44 by 132 feet. The removal into the new quarters was made necessary by the rapidly growing business of the concern.

Long Island City, L. I., N. Y.—Work will be commenced within a few days on the new factory for the Ford Motor Co., which will be located at the southeast corner of Jackson avenue and Hunnewell street and will be of brick and steel construction, 70 by 225 feet, three stories, and will cost $80,000.

New York—Robert D. Kohn has filed plans for building a two-story brick fireproof garage at 513-523 West Twenty-fourth street at a cost of $55,000. The building will be 150 by 88.9, with an extension. Charles De Rham of Phillipstown, N. Y., and H. Casimir De Rham of Tuxedo, N. Y., are the owners.

News of Agencies

Savannah, Ga.—Carter-Logan & Bro., Oakland.
Savannah, Ga.—Hazard & Brockett, Regal.
Atlanta, Ga.—Steinhauer & Wight, Detroit electric.
Binghamton, N. Y.—D. H. Miller, Cole.
New Orleans, La.—Gentilly Automobile Co., Cole.
Para, Brazil.—Roman Joria, Cole.
St. Louis, Mo.—Van Auto Co., Alco.
Scranton, Pa.—J. H. Fleming, Alco.
Toledo, O.—F. S. Rockwell, Reliance.
Newark, N. J.—W. E. Eldredge, Lansden and Couple-Gear trucks.
Milwaukee, Wis.—Edgar F. Sanger Co., Maxwell, Stearns and Columbia.
Evansville, Wis.—G. H. Dann, Ford.
Foss Spur, Wis.—Martin L. Foss, Cameron.
Baltimore, Md.—Shaab Auto Co., Matheson.
Vancouver, Wash.—O. D. Durdaw, Parry.
Dalles, Ore.—Charles Johnson, Auburn.
Walla Walla, Wash.—The McBride Auto Co., Baker electrics.
Spokane, Wash.—J. H. Creige, Matheson Silent Six.
Stevens Point, Wis.—P. F. Koshollek, Cadillac.
Washington, D. C.—L. C. Ferrell & Co., Everitt.
Washington, D. C.—Lester D. Moore, Jr., Palmer-Singer, Reo and Buffalo commercial cars.

FRAZIER'S GARAGE AT SOUTH BEND, IND.

Current Motor Car Patents

Motor Car Brake—No. 960,426, dated June 7; to John J. Stawartz, Homestead, Pa.—The appliance to which this patent relates is illustrated in Fig. 2. It consists of a pair of brake shoes S, one on either side of the car, suspended from the side-members of the frame in front of the rear wheels of the car, in such a manner that they can be dropped under the wheels at the will of the operator when he releases the brake lever which is located at the right of his seat. Each shoe is comprised of two parallel triangular plates with a cross piece connecting the lower rear edges, pins connecting the rear edges and adapted to be engaged by the wheels, gripping blocks K secured between the lower front edges of the plates, and a means provided for holding the shoes suspended in the position illustrated. The gripping blocks have teeth on their lower surfaces; and the rear edges of the shoes are curved to conform to the shape of the wheel. A brake of this type would be very effective, in case of emergency, and at the same time would relieve the tires and driving mechanism of all braking strains.

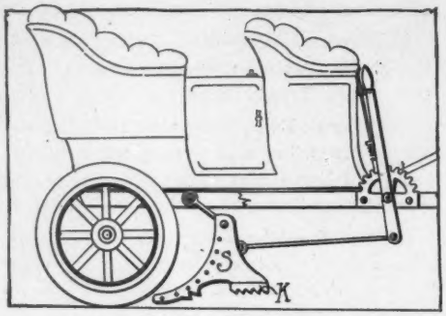


FIG. 2—MOTOR CAR BRAKE

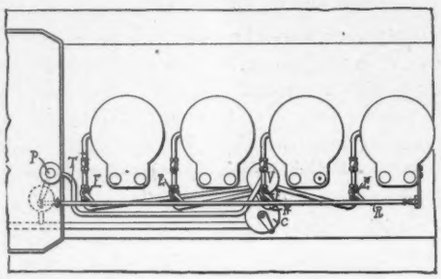


FIG. 3—SELF-STARTING DEVICE

Starting Device—No. 960,690, dated June 7; to Edward N. Pagelsen, Detroit, Mich.—This patent covers a starting device applicable to multi-cylinder internal combustion motors such as are used in motor cars, by means of which it is possible to force a charge of explosive mixture into the cylinder whose piston is on the firing stroke. As shown in Fig. 3, this device consists of a combination of a carbureter C, and pump P, a distributing valve V of the piston type which is controlled by the engine and actuated by the pump, pipes extending from the distributing valve to the cylinders of the engine, valves E in each pipe, a series of levers attached to the rod R adapted to simultaneously open or close the valves E, a connection N between the carbureter C and the distributing-valve V, and another connection T between the pump P and the distributing-valve. In operation, on drawing up on the handle of the pump P, a charge of fuel is drawn through the connection N from the carbureter into the distributing valve, and on forcing down the handle of the pump this charge is forced through one of the distributing pipes to the cylinder which is on the explosion stroke. Then by manipulating the ignition apparatus of the motor so as to ignite this charge the motor should be started. If one charge is not sufficient to start the engine, as many charges as are necessary may be forced into the cylinder by operating the pump.

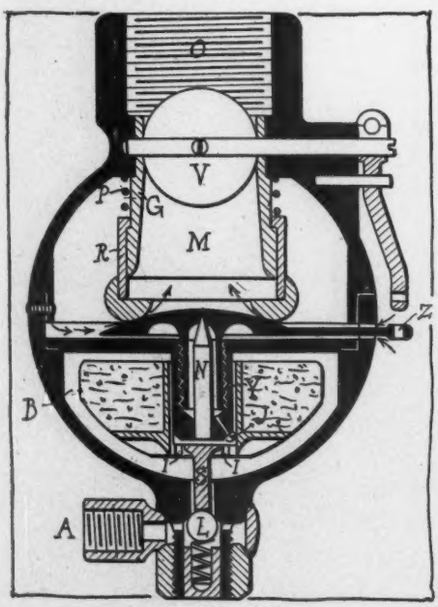


FIG. 1—A COMPACT CARBURETER

Compact Carbureter—No. 960,697, dated June 7; to Louis Plein, Chicago, Ill.—This patent relates to a carbureter of neat and compact construction as shown by the sectional view Fig. 1. Fuel enters the carbureter at A, the supply admitted to the float-chamber B, being regulated by the float, and its stem S which opens the ball valve L. When a suction is created in the mixing-chamber M of the carbureter to which the intake-pipe of the motor is attached, fuel is drawn through the openings I and J, up past the stationary nozzle N and into the mixing-chamber M. At the same time air is drawn in through annular slots as indicated by the arrows; the incoming air lifting the tubular member R which slides on the tubular guide G, against the tension of the spring P. A dome-shaped plate which is perforated in the center to form a seat for the nozzle N, is mounted on a threaded sleeve Y, so that by turning it, it is raised or lowered to regulate the amount of fuel passing through the perforation in its center. The spraying opening is regulated from the outside of the carbureter by means of the arm Z of the dome-shaped plate; and the mixture of fuel and air supplied to the engine is controlled by the butterfly-valve V.

Carbureter Without Springs—No. 960,601, dated June 7; to Alfred C. Stewart, Los Angeles, Cal.—The carbureter to which this patent relates differs from the ordinary type in that it has no internal springs, and is characterized by several peculiarities. A sectional view is shown in Fig. 4. It comprises a float-chamber R with a float F to maintain a certain oil-level therein, a well W communicating with the float-chamber, a mixing-chamber M with an air inlet I and an outlet O for the fuel mixture, a throttle valve V in the air inlet opening, an oil spraying pipe P extending up into the mixing chamber with a tube attached thereto which depends downward into the oil well, means E for vertical adjustment of the oil-well, a channel C communicating between the oil-well and the atmosphere and a vent N to maintain atmospheric pressure in the float-chamber. In operation fuel enters the float-chamber at A. When a vacuum is produced in the mixing-chamber M, and the valve V is opened, the suction draws air through the opening I, and fuel-vapor through the pipe P; a mixture of the fuel-vapor and air then takes place and it passes up into the intake pipe attached at the outlet O and then it passes on to the motor.

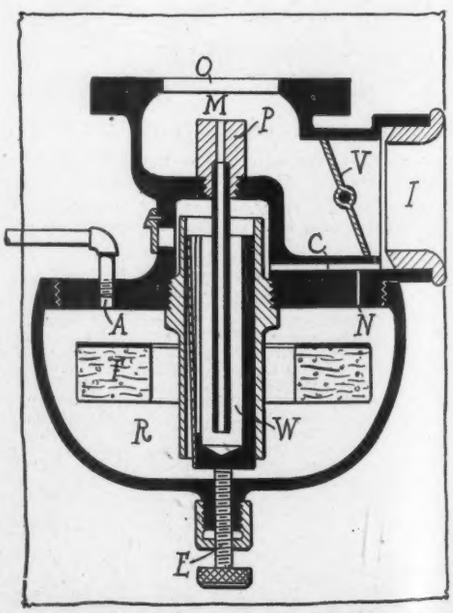
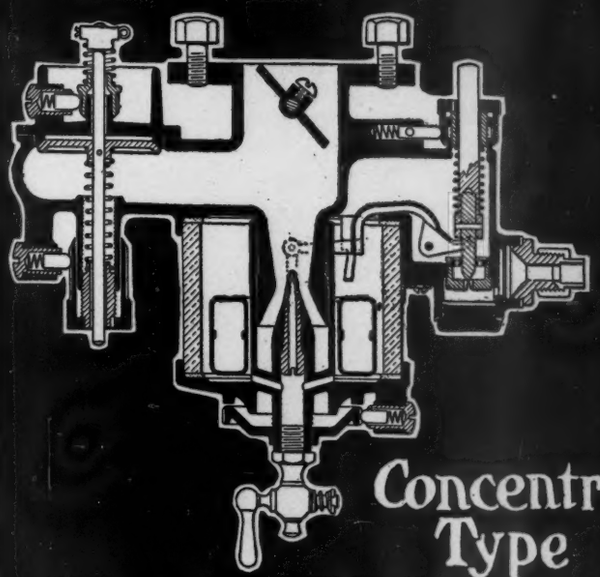


FIG. 4—CARBURETER WITHOUT SPRINGS

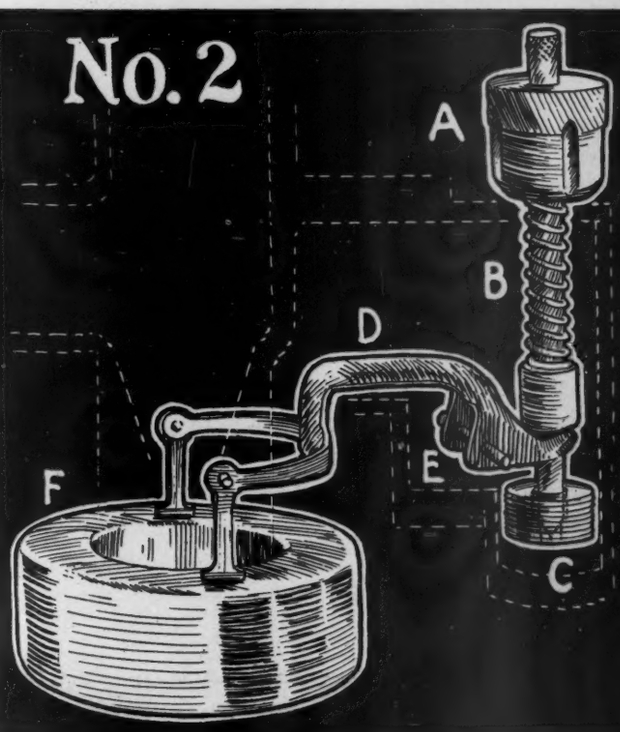
Model B



Concentric Type

STROMBERG CARBURETORS

No. 2



Next Week

in this space will be announced the features of the self-cranking, sweet-running, six-cylinder

WINTON SIX

For 1911

Advance Information Folders, now ready, will be mailed to any address upon application.

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THE WINTON MOTOR CAR. CO.

Licensed under Selden Patent

424 Berea Road, CLEVELAND, OHIO

KLAXONET

A Hail of Sound

MOST EFFECTIVE OF THE SMALL-CAR SIGNALS

Has four-inch diaphragm vibrated by a motor-driven ratchet wheel

The KLAXONET is loud—but its peculiar merit lies in its tone. It is wholly unique—abrupt, metallic, startling. It has an unmistakable warning quality that commands instant attention.

Current consumption is 2½ amperes. Four to six dry cells furnish it.

Ask your dealer, and write for catalog.

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Jackson

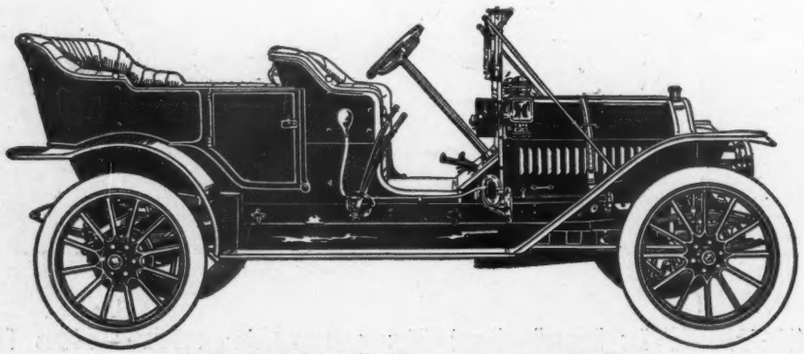
Unit Power Plants

Keep Oil In and Dirt Out

The model "50" is a big, powerful car and the motor is absolutely quiet and flexible. It is the unit power plant type—the bearings are run in a flood of oil, and dirt is entirely excluded from the working parts. Jackson wear-proof construction is found throughout. The car will stand up under hard service.

SPECIFICATIONS

Body. Five passenger. Two extra seats, $50.
Motor. Four-cylinder. Cylinders cast in units, with five-bearing crank shaft. 4¾-inch bore and 4¾-inch stroke. Valves inclined at 45 degrees in cylinder heads, and operated by overhead cam shaft. Unit power plant with self-contained oiling system.
Transmission. Selective sliding gear, three speeds forward and reverse. Transmission housing incorporated in unit power plant, with multiple disc clutch running in oil. Both transmission shafts on annular ball bearings of the separated ball type.
Ignition. Low tension magneto and batteries.
Rear Axle. Bevel gear drive. Roller bearings next the wheels and on either side of differential. Ball thrust bearings. Pinion shaft is roller bearing with ball thrust bearings.
Suspension. Full elliptic springs, front and rear. Frame dropped at the rear to bring the car close to the ground and still allow ample spring action.
Wheel Base. 120 inches.
Weight. 2,800 pounds.
Tires. 36 x 4.
Color. Dark blue body; pale yellow gear.
Price. $2,350.



"Perfect detail is the mark of quality"

JACKSON AUTOMOBILE CO.

JACKSON, MICHIGAN **Licensed Under Selden Patent**

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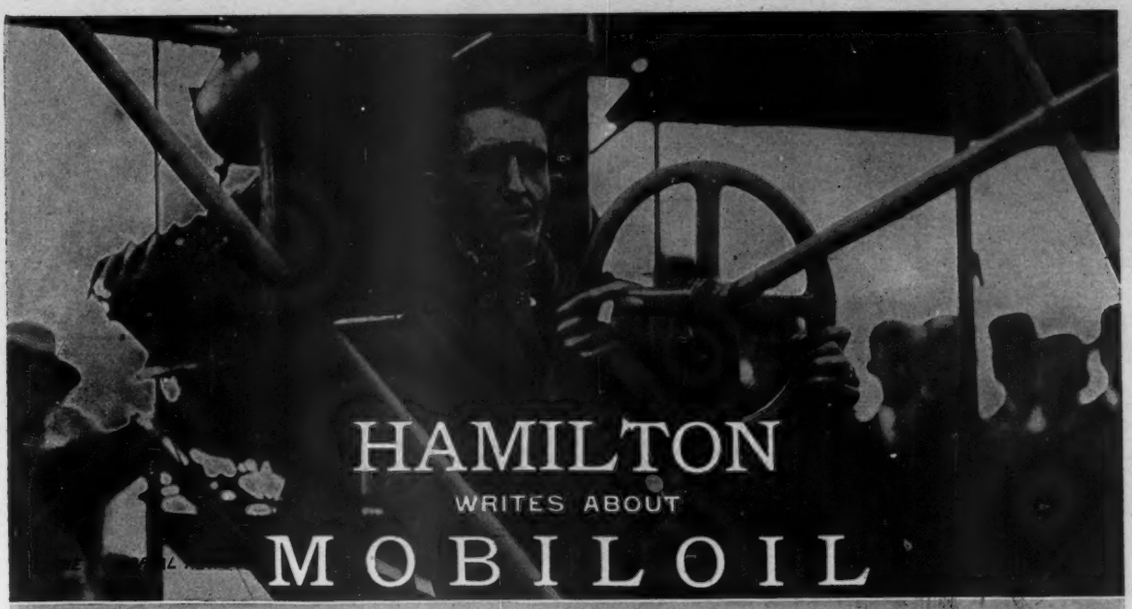

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WRITES ABOUT
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MOBILOIL
ON HIS FLIGHT
FROM
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TO
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Hotel Astor
New York

Vacuum Oil Company, June 14, 1910.
New York,
N.Y.

Gentlemen:

I wish to let you know that the oil which befouled my spark plugs was not your oil. I used MOBILOIL going to Philadelphia and had no trouble. Owing to misunderstanding, I was supplied there with some other oil, which caused the trouble resulting in my descent. Had I used Mobiloil on my return flight, I should, undoubtedly, have made the trip home without a stop.

Very truly yours,
Chas. K. Hamilton

Almost all aviators in this country and Europe use Mobiloil.

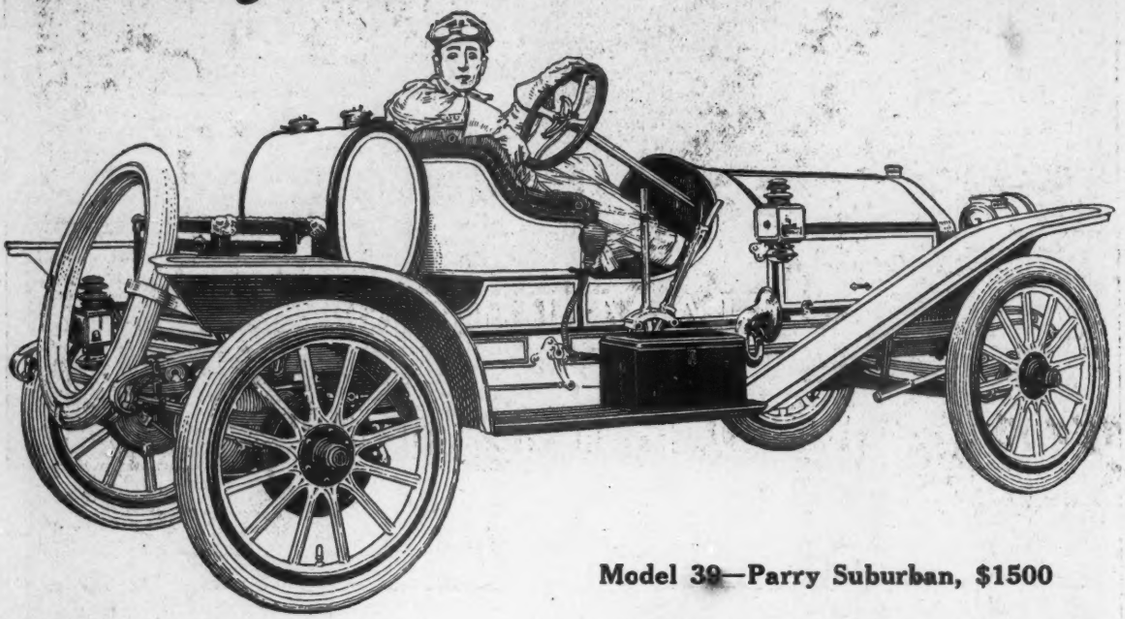
FOR SALE BY DEALERS EVERYWHERE.

MANUFACTURED BY

VACUUM OIL COMPANY

ROCHESTER, U. S. A.

Parry Idea— 1911



Model 39—Parry Suburban, $1500

Parry Agents - - Parry Partners

We are now closing agency contracts for 1911 and want live, square dealing men as our agents.

PARRY 1911

Specifications—Ready Now—Dates of Delivery Below

Model 25. (Delivery Aug. 1st.)
Roadster—Four cylinders in pairs, 20 to 25 H. P., 100 in. wheelbase, five lamps and generator, two or four seats.
PRICE, under $1,000.
Definite price later.

Model 43. (Immediate Delivery.)
Roadster—30 to 36 H. P., 116 in. wheelbase, five lamps and generator.
PRICE, $1,300.

Model 42. (Immediate Delivery.)
Touring Car (5 passenger)—30 to 36 H. P., 116 in. wheelbase, five lamps and generator.
PRICE, $1,350.

Model 39. (Immediate Delivery.)
Combination Roadster—Auxiliary oil and gasoline tank, five lamps and generator, trunk, tire irons, horn, 34 by 3½ in. wheels and tires and double rear seat, making four passenger car if desired.
PRICE, $1,500.

Model 37. (Immediate Delivery.)
Toy Tonneau (4 passenger)—30 to 36 H. P., five lamps and generator. Elegantly finished.
PRICE, $1,500.

Model 44. (Delivery Aug. 1st.)
Touring Car—Large 5 passenger, 118 in. wheelbase, 36x3½ in. wheels and tires, with lamps and generator. Elegantly finished.
PRICE, $1,600.

Model 46. (Delivery Aug. 1st.)
Torpedo—118 in. wheelbase, 36x3½ in. wheels and tires, all lamps, demountable rims, etc.
PRICE, $1,850.

Model 41.
Coupe—Inside drive.
PRICE, $1,850.

PARRY AUTO COMPANY
INDIANAPOLIS, INDIANA

BROKE SEVENTEEN RECORDS

At the Indianapolis Speedway Meet, May 27, 28, 30, stock cars equipped with Schebler Carburetors broke seventeen stock car records. No other carburetor broke any stock car record at the meet.

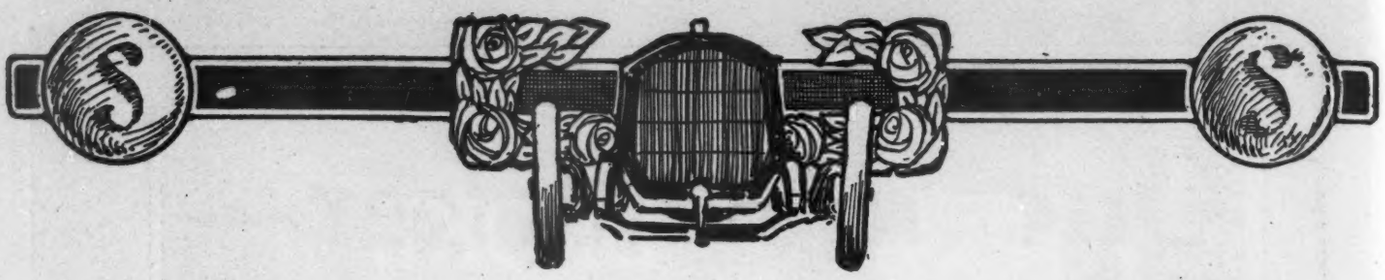
If you wish to break records—use a Schebler.

Wheeler & Schebler

Indianapolis, Ind.

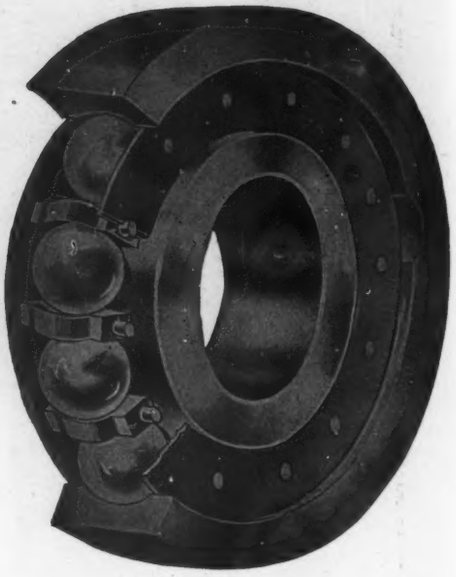
Pacific Coast Representatives—Moore Motor Supply Co., San Francisco, Los Angeles and Oakland.

CHICAGO OFFICE—Mr. G. T. Briggs, Mgr., 1438 Michigan Ave.
DETROIT OFFICE—Mr. J. F. Chapline, Mgr., 876 Woodward Ave.
NEW YORK OFFICE—Mr. E. J. Edmund, Mgr., 1783 Broadway.
BOSTON OFFICE—Mr. W. J. Connell, Mgr., 36 Columbus Ave.



Schafer Ball Bearings

The Pioneers to Employ 92% of Balls in the Raceway



Schafer Ball Bearings Fear No Comparison

LUBRICATION

About twice a year the housing should be packed with a good grease, free from acid. Should bearings be exposed to water (which proves disastrous) more frequent packing with grease to keep out the moisture will prolong their life indefinitely. Bearings must not be allowed to rust or be free from grease.

WRITE FOR CATALOGUE

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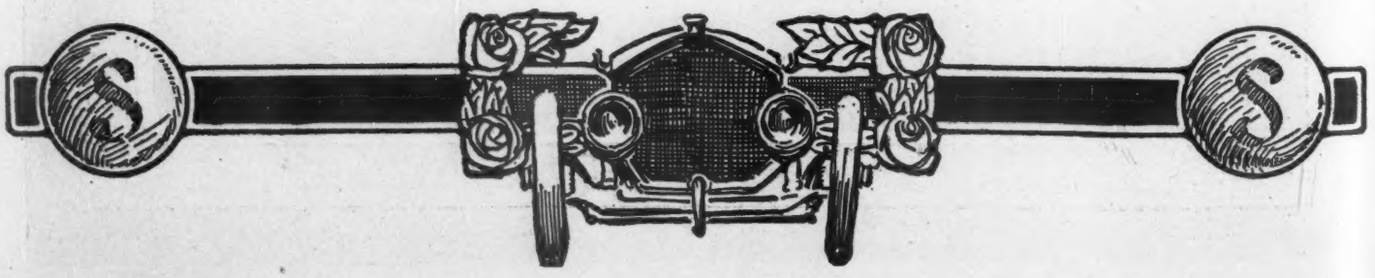


Once a Knocker—Always a Knocker

THE automobile trade will remember the undignified tactics resorted to a short time ago by a certain manufacturer of speedometers to create the impression that the Stewart Speedometer was an infringement on his patents—lots of bombast—suits—dire consequences, etc.

When we proved to the satisfaction of the trade that we are the owners of the earliest and most nearly basic patents covering the centrifugal speedometer—these chesty proclaimers sent their bellows to the repair man.

Now it is working again—

This time it is a one-sided misleading test.

The Stewart & Clark Manufacturing Co. make this statement:

THE Stewart Magnetic Speedometer is more accurate—more readable and more durable than any other speedometer on the market—compared to the centrifugal speedometer it has these tremendous advantages which none can gainsay—it starts to indicate from zero—will indicate a single turn of the wheel—

No centrifugal instrument can be depended upon below 8 miles per hour—

The speed of the magnet (the fastest moving part in our instrument) is 400 revolutions per minute at 60 miles per hour speed.

The speed of the centrifugal instrument is 2,560 revolutions per minute for the same car speed or 60 miles per hour—think what this means in wear and tear on flexible shaft, gears, etc.

In the magnetic instrument there is no contact between the rotor and disc—as there is absolutely no contact—there can be no wear.

This rotor has no mechanical function but to revolve—It doesn't touch the disc at any time or place—the movement of the disc caused by magnetic torque is absolutely in accordance to the speed at which the magnet is rotated—the movement is ample—requires no multiplication with its attendant links—cam, etc.—is direct—the spacing on the scale for each mile is three times greater than on the centrifugal instrument—one mile on the scale of the magnetic instrument being equal to three miles on the scale of the centrifugal—making it more easily read.

In the mechanism of the centrifugal instrument—there is a small point pressing against the disc which revolves at high speed—2,560 revolutions per minute—this point moves the linkage to the indicating pointer—this point rubs against a common yellow brass disc

which can be lubricated only when assembled

Wear must and does occur at this point—The movement of this point for the whole range of the scale from zero to 60 miles per hour is just about one-quarter inch—This movement must be multiplied 16 times by cams—levers and links to the full movement of the pointer—each with its pivot—every one of which wear with every jolt or jar the car gets. Inaccurate at the start (and we can prove it)—what is it after 1,000 or 10,000 miles.

For indicating speed—the magnetic type of instrument is alone to be considered—the inherent defects of the centrifugal type make it impracticable for dependable service.

All 1911 speedometers are provided with means for reducing the co-efficient of temperature change to a point where it goes beyond any requirement even for laboratory use—for road work our instrument has always averaged far better than any ever built by anyone.

The 1911 Stewart models are the handsomest instruments ever offered—there is a reduction in diameter and in the height of the instrument—scale size remaining the same—a reduction in weight, and—best of all—an enormous reduction in the speed.

The new mechanism is mounted on a skeleton frame, completely assembled and tested, then cased in a handsomely knurled brass cup highly finished and lacquered. The most beautiful instrument ever produced.

CHALLENGE

Accuracy and Durability Test

We hereby challenge the Jones Speedometer to the following contest for accuracy and durability:

To seal twenty of our 1911—$15 speedometers in a case with twenty of Jones—$75 model speedometers—each to be driven with its own shaft and gear equipment for 100,000 miles—at the rate of 60 miles per hour—tests for accuracy to be made at start and finish—the makers of the instrument averaging lowest in accuracy and durability to donate $5,000 to some charity to be hereafter named.

Stewart & Clark Manufacturing Co.

Makers of Stewart Speedometers

1850 Diversey Boulevard, Chicago, U. S. A.

Mosler Spit Fire

THE PLUG
WITH THE DEEPEST CHAMBER

Leads the World

READ! NOTICE! READ!

Our SPIT-FIRE Plugs are for sale by all legitimate dealers and jobbers.

If you cannot get delivery----THERE'S A REASON

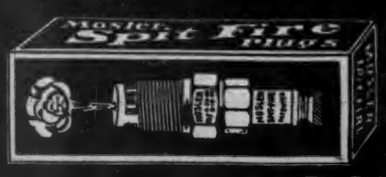
Write us direct.

WE CAN SHIP ON TWENTY-FOUR HOURS' NOTICE

Dealers and jobbers beware! We protect our trade mark

PACKED IN THIS BOX

FOR YOUR PROTECTION



DON'T BUY IMITATIONS

A. R. MOSLER & Co. 163 W 29TH ST. NEW YORK.

THE HALLADAY PRESS CAR

Carrying Beecroft of Motor Age and The Automobile. Burman of the United Press. Morgan of the Cincinnati Post. Patterson of the Chicago Examiner. Fulton of the Chicago Record-Herald. Lasker of Munsey's Publications and Faas, driver. The Halladay was "THERE" forty ways in the Glidden Tour. Several of the newspapers served by the occupants of the Halladay Press Car are represented in the margin of this advertisement.

In The Glidden Tour

The Halladay Press Car, Model D., 7-passenger, listing at $2,500, was taken from stock and entered in the Glidden Tour to carry the newspaper men at the last moment.

Not only was the car provided but also block and tackle, tow ropes, chains, spade, hip boots, and all other emergency devices which might come in handy in assisting any of the contestants out of the mud, the mire, the quicksand, or up the frightfully steep hills along the way.

The Halladay is built for rough, hard usage—with more power than enough—and if you will compare this Model D., 40 H. P., 7-passenger car, listing at $2,500, with competitive makes at from $3,000 to $5,000 you will not wonder WHY we decided to put the Halladay in the Glidden Tour this year—the hardest and longest Glidden Tour ever held.

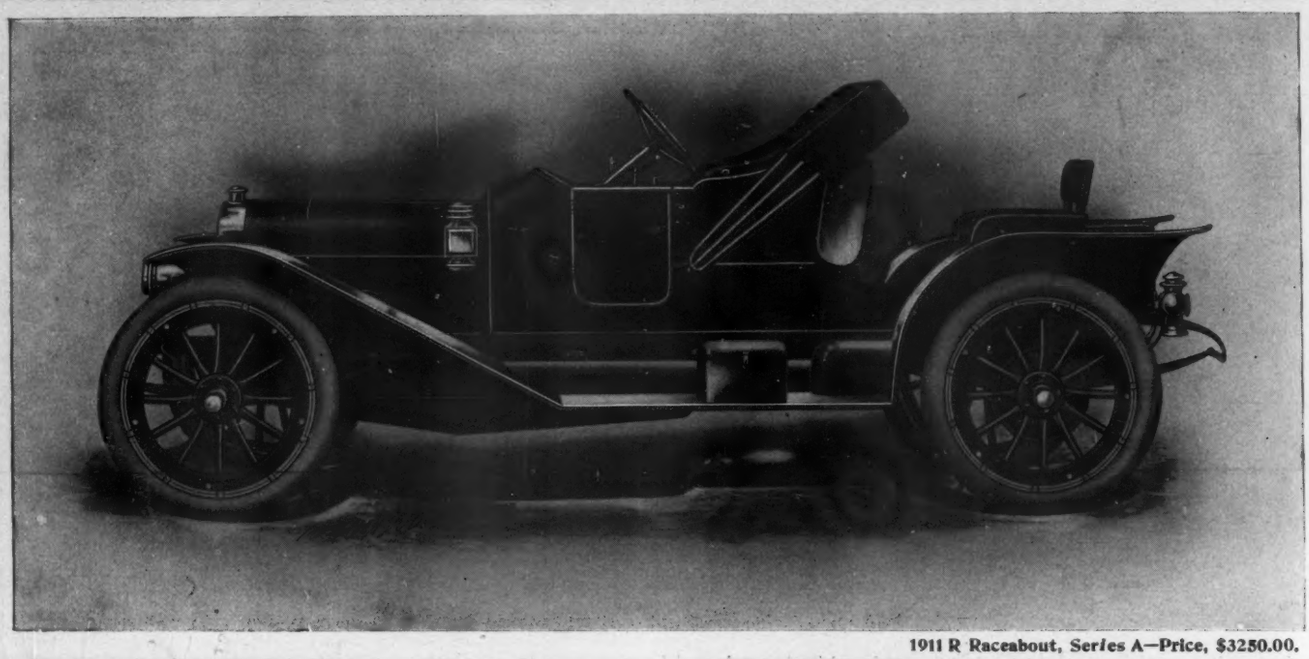
The Halladay carried 3 more passengers than any other car in the Tour—carried the heaviest load over hundreds of miles of roads that were never meant to be traveled by other means than mule teams and oxen, and it negotiated the trip through swamps and hell holes, from start to finish, without troubles of any kind worth mentioning.

We have said all along that The Halladay was ABSOLUTELY the most for the money—and now, we feel sure, You know it as well as we.

There are nine different Halladay models at from $1,100 to $2,500. It makes a nice line for live dealers.

Streator Motor Car Co., Streator, Ill.

Grant Square Automobile Co., 1378 Bedford Ave., Brooklyn, N. Y.
Halladay Motor Co., 1421 Michigan Ave., Chicago.
Heaney Automobile Co., 107 Tenth St., South, Minneapolis, Minn.
C. F. Louk, 1808 Farnam St., Omaha, Neb.
Halladay Motor Co., Wichita, Kan.
Motor Car Import Co., 810 South Olive St., Los Angeles, Cal.
Georgia Commission Co., Albany and Atlanta, Ga.
The Runnels Auto Co., Fort Worth, Tex.
H. M. Cornell, Lethridge, Alberta, Canada.
Halladay Auto Co., Ltd., Winnipeg, Canada.



1911 R Raceabout, Series A—Price, $3250.00.

1911 SERIES IN BRIEF

It will be noticed that our 1911 types are referred to as Series rather than Models, which means that our present designs are as near perfect in general construction as it is possible for us to make them, and hereafter we will discontinue yearly Models, and any slight changes or added features will be adopted as soon as possible after they have been approved of in our experimental and testing departments. This means a great advantage to KNOX owners, agents and customers. The fact is, we have endeavored to build the best cars and of the best material obtainable, and we believe that both quality and efficiency have been most fully demonstrated by hundreds of satisfied owners, as well as by our successes in contests.

The present KNOX Models have been completely designed at a later date than any other make of high-grade car, and for this reason embody all of the most advanced and up-to-date ideas.

CHANGES IN CHASSIS CONSTRUCTION

Model "R"

WHEEL BASE: Lengthened to 122 inches.

FRONT AXLE: Nickel steel, heat treated, placed 2 inches farther ahead than 1910.

REAR SPRINGS: Lengthened to 58 inches over all. The top half or scroll has also been lengthened 5 inches, still improving the good riding qualities.

REAR AXLE: Knox full-floating type, running on Hess-Bright annual ball bearings. The entire differential is easily dismounted if necessary.

TORSION RODS: Will be used on all 5 and 7 passenger types.

FRAMES: Made of special heavy gauge nickel steel with deep side channels and wide flanges.

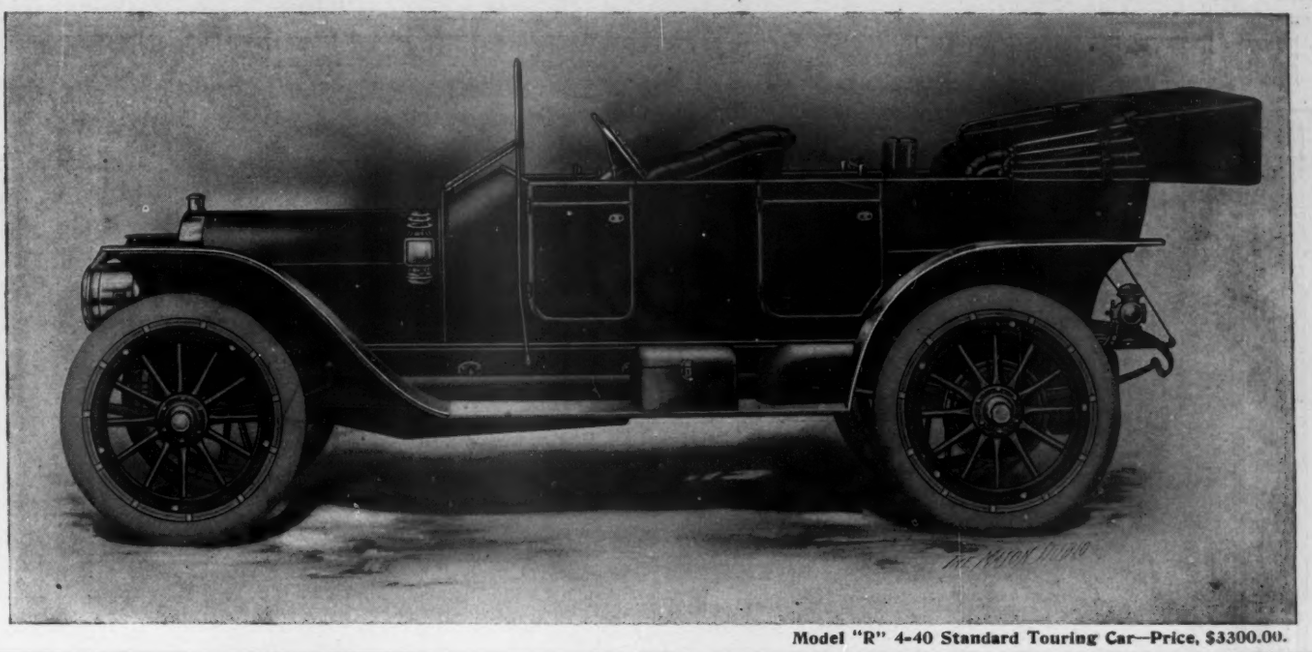
The other changes are minor ones and come only as the result of another season's experience, all of which we endeavor to use to produce cars that are unexcelled.

Model "S"

The chassis construction remains the same throughout, having proven entirely satisfactory after over a season's test in the hands of customers in all parts of the country, as well as having demonstrated its durability and efficiency in many races and long-distance contests during the past 15 months, in which this model has broken many world's records.

KNOX AUTOMOBILE COMPANY

SPRINGFIELD, MASS.



Model "R" 4-40 Standard Touring Car—Price, $3300.00.

Knox

1911
SERIES

UP-TO-DATE IN TYPES AND CONSTRUCTIONS
ADVANCE INFORMATION ON REQUEST

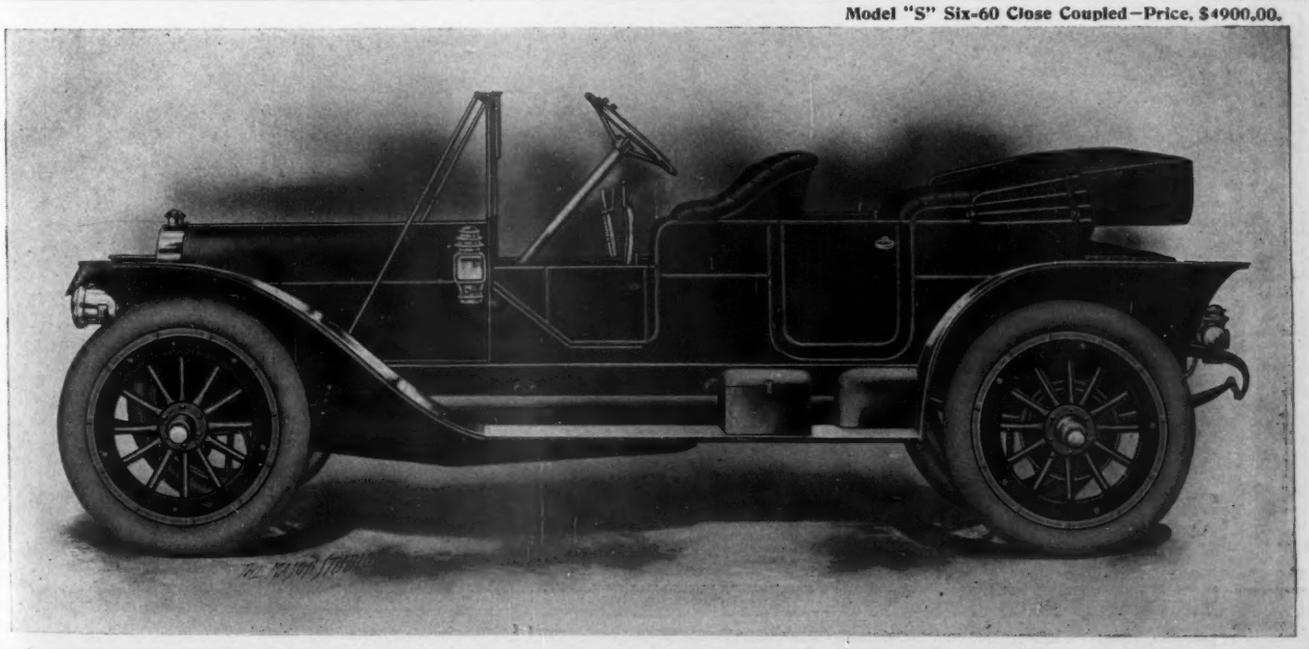
Our agency proposition for unoccupied territory is interesting.
Deliveries begin July 15th.
All types fully equipped.
Write for advance information.

KNOX AUTOMOBILE COMPANY

Licensed Under Selden Patents.

SPRINGFIELD, MASS.

Model "S" Six-60 Close Coupled—Price, $4900.00.



The Magneto of Verified

The trouble with all ignition systems up to date is that none has been the product of more than a *few* years' experiment. Back of them there have been no years of *experience*, no years of *use*, no opportunity to *verify* the *efficiency* and *durability* of their various features.

There is one magneto the product of over fifteen years' *experience* in the manufacture of electrical apparatus. Over fifteen years of *experiment*, over fifteen years of *use*, have *verified* the *efficiency* and *durability* of every feature of the

BRIGGS MAGNETO

Is it therefore a *better* magneto? Yes. So *much* better that we *guarantee* it, not only in material and workmanship, but for unlimited service. Read the guarantee:

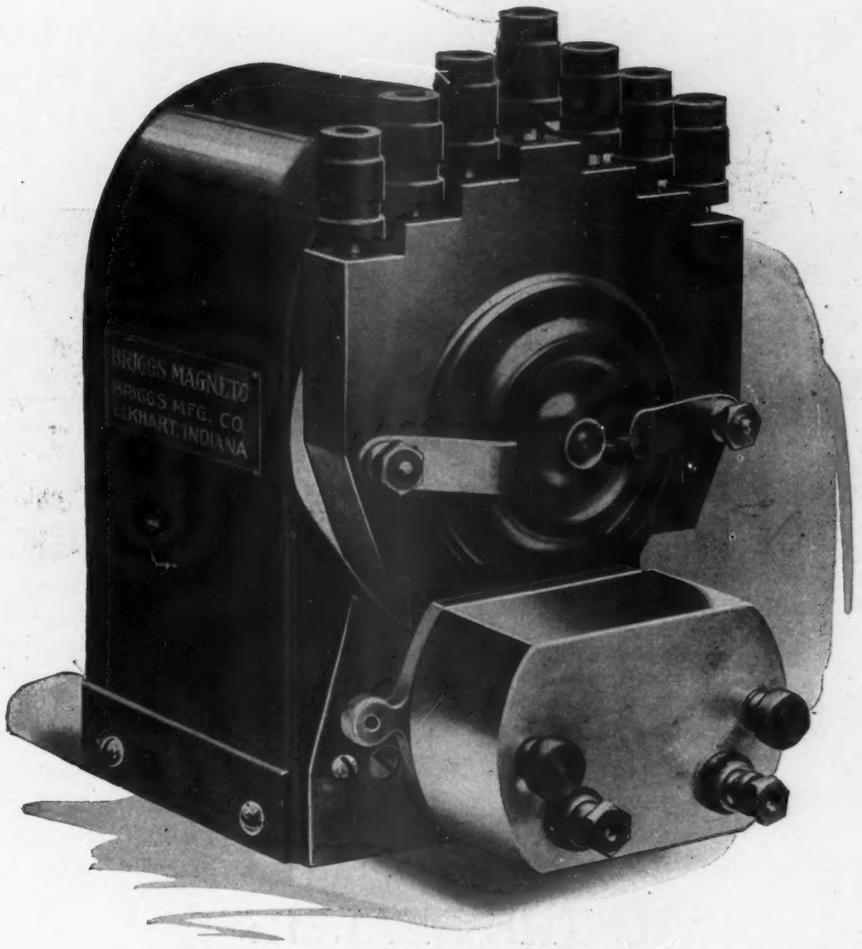
> Every owner of a motor car equipped with the Briggs Magneto and Coil is guaranteed a perfect working ignition system until the car itself goes to the scrap-heap. If for any reason the ignition system fails to satisfy or loses efficiency, the magneto and coil may be shipped to our factory, or nearest branch, by express, at our expense, and we hereby agree to return by express at our expense, and on the same day as received, either the coil and magneto in perfect working condition and as efficient as new, or an entire new system.

We are now manufacturing Briggs Magnetos and Coils in quantities. Many 1911 cars will be equipped with them. If you are interested in motor car *reliability*, either as manufacturer, agent, owner or prospective buyer, write for our book about the Briggs Magneto.

We have a good proposition to offer a branch manager or exclusive agent in every city.

BRIGGS MANUFACTURING COMPANY

Efficiency and Durability



Briggs Magneto for six-cylinder motor.
Also made for two and four cylinder motors.
Dual System — High Tension.

Factory and Offices: ELKHART, INDIANA

Siblay 20

PRICE $900 (INCLUDING BOSCH MAGNETO)

SPECIFICATIONS:

MOTOR	3¼ x 4
CYLINDERS	Cast in pairs
SUSPENSION	Three point
CONSTRUCTION	Unit power plant
TRANSMISSION	Three speeds ahead and reverse
COOLING	Thermo Syphon System
WHEEL BASE	100 inches
WHEELS	32 inches
TIRES	3 inches
MAGNETO	BOSCH—To be sure

The 1911 SIBLEY 20 is positively the classiest roadster, the best engineered automobile, the biggest automobile value ever offered for anything under $1,500. Think of it! UNIT POWER PLANT. 20 H. P. Bosch Magneto. $900.

TO THE DEALER:

Do you want the biggest automobile proposition there is for 1911? Do you want a car that is absolutely right, the biggest value in the automobile industry, the most popular sized and priced car on the market, made by men who have been in touch with your needs for years and who know how to supply them?

We are preparing to deliver on a large scale. We want *you* to share in our profits by becoming a part of our organization. We are producing a car that will be THE SEASON'S BEST SELLER.

WHY? BECAUSE THE CAR IS JUST WHAT THE PURCHASER WANTS AT THE PRICE HE CAN AFFORD TO PAY

The car itself cannot be improved, and the price is within the range of every automobile buyer. It is the most for the money, and the car looks it.

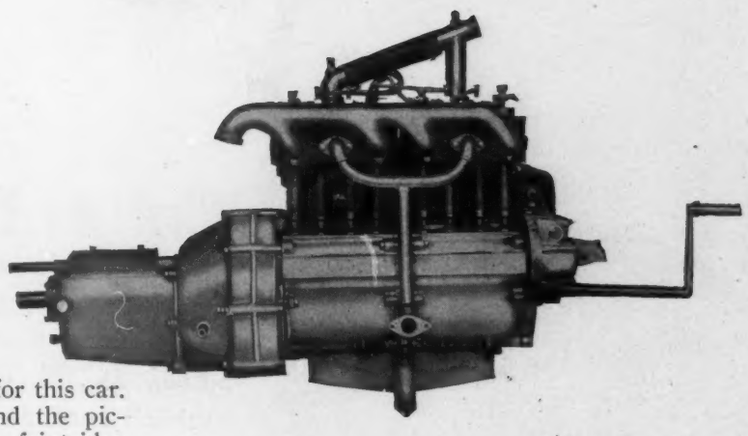
Look the specifications over, then write us for territory. Our contracts are continuous. We cannot break them because another dealer wants your territory after you have created the demand.

Sibley 20

To the Purchaser:

The SIBLEY 20 is a classier car than you could have dreamed of at $900. It is the most noticeable thing that will be shown this coming season.

SIBLEY 20 has all the requisites of a car at twice its price.

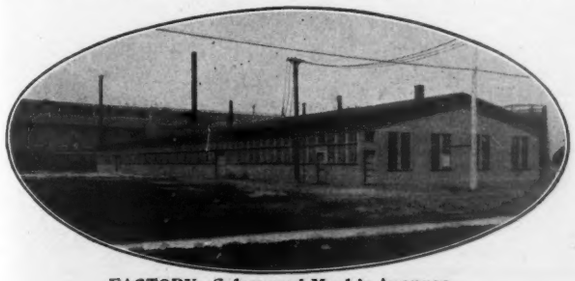


1911 Model Ready in September

It will more than pay you to wait for this car. The specifications herewith given and the picture on the opposite page give only a faint idea of the truly wonderful value offered in our new car. Just compare these specifications with those of other more expensive cars, and see how they compare. That will be evidence enough when you know how thoroughly well built the SIBLEY 20 is.

ESSENTIALS

The manufacturers of the SIBLEY 20 have taken into consideration and have carefully observed all of the essentials in high class automobile practice. Material and workmanship have not been neglected over a single inch of this thoroughly well built mechanism. Here is to be found a power plant all that a man could desire. It will take you as fast as you dare drive on any roads. The car is supplied with an intermediate gear, which will give you 20 miles per hour on the steepest grades. A splendid car regardless of price. A very notable car for $900.



FACTORY—Solvay and Mackie Avenues

THE UNIT POWER PLANT

In the SIBLEY 20 is a great mechanical achievement. We beg you to compare it with the power plants in cars costing twice as much. It is *made right* by the men who *know how*. It is a Renault type motor with clutch and gears enclosed in a single aluminum case. All parts are dust proof. This unit power plant is attached by a three-point suspension system now adopted by the greatest automobile builders in the world.

You cannot afford to miss this greatest automobile opportunity. Whether you wish to buy a car or to sell cars, your next move should be the same. It will pay you tremendous dividends either way, if you will send your address to the

Sibley Motor Car Co.

Executive Offices: Edwin S. George Bldg.

870 Woodward Avenue

DETROIT - - MICHIGAN

FACTORY: DELRAY, DETROIT

Model "H-T"

Let the Eagle Scream

Let Old Glory Wave

"O'er the Land of the Free And the Home of the Brave"

and every true American do homage to the day which marks the independence of our great and glorious country.

Make a resolve this day to declare YOUR Independence and to no longer play the role of E. Z. Mark to His Majesty the Automobile Manufacturer.

Of course you know that no manufacturer of automobiles makes the magneto that his car is equipped with. You probably know also, that the Purchasing Agent of such a factory is not retained merely to keep his family from the poor house, and it doesn't take much of a mathematician to find that a low-priced magneto plus the cost of six dry cells or a cheap storage battery means a tremendous saving on a year's output of cars.

It hasn't proved such a difficult task to explain all this satisfactorily by the "Dual System," and Mr. E. Z. Mark has been contented —"till he woke up."

What are YOU going to do?

Are you going to be content to accept a magneto which requires BATTERIES to start on, which will not allow of throttling down the motor without stalling, and which carries with it NO GUARANTEE of service or satisfaction? OR are you going to demand

THE K-W HIGH TENSION MAGNETO

which requires NO COIL—NO TIMER

and

NO BATTERIES

being a complete ignition system in itself, and carries a written binding guarantee to start any engine of any H. P. on a quarter turn of the crank WITHOUT BATTERIES—to run it faster, develop more power, give greater flexibility, and cut down gasoline consumption.

The K-W High Tension Magneto carries with it a Certificate of Insurance covering it

Forever

against losing its power (unless battery current is run through it or the magnets are removed from the magneto, for which, of course, we are not responsible), and the size and heat of the spark never to deteriorate.

If you are going to purchase a new automobile, *don't* let the manufacturer "hand you" a Magneto which requires batteries to start on. It doesn't take much figuring to determine that a megneto which will not furnish a spark of sufficient "volume" and "heat value" to start an engine on is hardly the kind of a magneto that you want. You can have a K-W by insisting upon it.

If you already have a car that is "magneto equipped," any explanation we might give would be superfluous. You know its weakness, but you may not know what the K-W will do for you.

Tell us the make and model of your car, and we will send you our catalogues by next mail and give you full information in our first letter.

Don't put it off—DO IT NOW!

Ask for a copy of our Guarantee—it will open your eyes.

We also manufacture

eight different models of Low Tension Magnetos which are for cars having no provision for gear drive. These Magnetos are driven by belt or friction from the flywheel and carry with them the same strong binding guarantee absolutely protecting YOU.

The K-W Low Tension Magneto acts as a powerful and reliable source of current and entirely takes the place of dry cells and storage batteries.

The K-W Low Tension Magneto, when used with a K-W Coil, or K-W Master Vibrator and the old coil, is absolutely guaranteed to start the heaviest engine on a quarter turn WITHOUT BATTERIES and run it perfectly at all speeds.

All "L-C" models are guaranteed in addition to furnishing perfect ignition to operate powerful searchlights, tail light, and speedometer light, and is the ONLY MAGNETO IN THE WORLD which will do so.

All K-W Magnetos are Oil-Proof, Water-Proof, Dust-Proof, and last, but not least, Trouble-Proof.

TRADE **THE K-W IGNITION Co** MARK

36 Power Ave. CLEVELAND, OHIO, U.S.A.

K-W Spark Coils are GUARANTEED FOREVER and will be *replaced free of charge* if they ever go wrong.

IF YOU ARE A DEALER, WRITE US ON YOUR LETTERHEAD AND ASK FOR OUR POSTER. IT'S ONE OF THE MOST ARTISTIC POSTERS EVER ISSUED, 15x35 INCHES, AND IS IN TWELVE COLORS.